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Tracing Lost Calls.

To the telephone manager one of the most important reports is that of "Lost Calls." This applies generally to toll and long-distance business, but can also be made applicable where contracts for local service are based on "message rate" or "increased service," that is where the subscriber pays only for the number of completed connections he makes.

The principal reasons for lost calls are as follows:

No circuit (meaning all circuits are busy.)

Telephone busy, calling party will not wait.

Cannot locate called party.

Called party out, left word.

Called party out, do not know when he will return.

Telephone out of order.

Called party has no telephone. Calling party would not pay message charges.

Can't raise.

Reversed call, party refused to O. K.

On long-distance calls the above information can be taken from the tickets and analyzed daily. A few months will show if the clerical expense is justified. From the analysis certain information can be secured. A ticket marked "No Circuit," means one of three things. Either the normal traffic is not properly provided for; there is an unusual number of circuits out of order; or there is a temporary increase in the traffic load.

A ticket bearing the notation "telephone busy" may merit investigation to ascertain if the called party is provided with equipment in accordance with the requirements which good service demands.

"Cannot locate called party" may be reviewed in the light of investigating as to what means were adopted to find the man.

In cases of "called party being out" there is little action to be taken except to be satisfied that the information is authentic.

"Telephone out of order" signifies that part of the machinery for the manufacture of service has broken down. It has been suggested that each manager at toll points notify other managers of lost business chargeable to this cause on calls for telephones in his district.

A calling party often refuses to guarantee message charges. The percentage of lost business from this cause

should be observed with the view of extending the service, to eliminate the use of messengers.

"Can't raise" may signify a telephone out of order; the poor location of an instrument; neglect on the part of the called subscriber or his clerks, or that there was no one to answer. Frequently the difference in time between widely separated points may account for a "can't raise" as four-thirty o'clock in Cleveland would mean five-thirty o-clock in Eastern cities.

The amount of lost business will show how far the investigation should be followed.

On reversed calls it is entirely within the called subscribers province to say whether or not he desires to talk. It has been thought that his attitude may indicate whether, if given a little more information, he would accept the call. If he could be given a hint as to the nature of the calling party's business there is a chance of completing the connection.

We were not surprised to hear that a "lost call campaign" conducted by a manager resulted in a reduction of lost business over that of the previous year by an amount of revenue almost equal to the amount of his pay-roll and this was accomplished, with little additional clerical assistance.

In many cases the tone and expression used by the operator will persuade a subscriber to allow her to handle the call for him by messenger or otherwise to the best of her ability.

Ten per cent is a very low figure for lost business. A fair general average is in the neighborhood of fourteen per cent. This is too much to lose when attentiveness and careful training of the staff of operators and all the other employes in that branch, will bring in the dollars.

"Pull."

While "push" is extolled as a virtue, "pull" has long been treated as a very bad thing. To its door have been laid the evils of corrupt government and the wickedness of wrong business practices. Much of this is justly merited. But we so often hear men complaining of the combination being against them, of desirable positions being open only to those having "pull," that we wonder if something else may be at fault.

When rightly and carefully viewed, "pull" is seen to be based on a quality in man which is intrinsically a virtue. Its origin is the friendly interest which one person feels in the success of a friend or acquaintance. If out of a group of equally good applicants, one is known as related to a friend, it is natural and right that this fact should be considered. Without friendship this world would be a howling wilderness of woe, with little to justify continued existence.

When a group of men have worked shoulder to shoulder building up a good telephone business, it is right that they should stick together. Then others call them "the ring." If from the young men who are growing up among them are chosen some of the employees, the unsuccessful man attributes it to "pull." Of course, it can be carried too far, as when favorites are given positions or retained in office in spite of incompetency. Yet this occurs less often than many suppose.

If this friendly interest were entirely removed, each man would be forced to stand or fall by comparative standards. He would be heartlessly cast off when some newcomer surpassed him a few points, regardless of faithful past services. Business would degenerate into cut-throat warfare—every man for himself and the devil take the hindmost.

No, pull is not all wrong. The friendship on which it is based is more necessary than money. Those who are finding fault with existing conditions will do well to consider if they have shown the right spirit. The genuine man has little difficulty in making friends.

New York's Greedy Taxation System.

The taxation system in New York, in so far as it applies to corporations, seems to be particularly characterized by its affording to grasping local representatives of the government an opportunity for extracting tribute from telephone companies, and particularly from small companies, which by their negligence or their ignorance allow themselves to be subjected to the heavy penalties which accrue from delayed payment. Without taking up the merits of the individual assessments, it is apparent that the system is extremely cumbersome, entailing a large amount of work both on the officials of the State, county, etc., and upon those of the telephone companies, so that the actual taxes are accompanied by an altogether too heavy proportion of indirect expense.

The article by Mr. Taylor is a most valuable contribution, showing how the expenses and risks of handling taxation matters may be minimized. By increasing vigilance, after making a careful study of the whole question, a manager can assure his company against the grasping demands of the local collectors who add to their income by fostering lapses from the letter of the law.

It is worthy of note also that upon another page of this issue is printed a news article showing that several companies, all of which, we believe, come under the control of the Federal Telephone & Telegraph Company, with which Mr. Taylor is connected, have succeeded in obtaining a reduction of their taxes. This is a practical demonstration of the value of the sort of work Mr. Taylor is doing for his company. For some years past various companies in the State have taken advantage of the provision of the law which enbles them to apply to the courts for reductions of assessments, but many others have been deterred from this action by the expense. The small companies find it cheaper to "grin and bear it," so that in effect this provision results in what practically amounts to discrimination. Associated action might be a possible way out of the difficulty.

It is one thing to dodge taxes, and quite another to insist upon a square deal. The telephone companies of New York have much to do in the way of putting themselves in a position to secure the latter, and it is to be hoped that concerted action by the people interested will result in a consideration of the subject which will improve conditions at some time in the near future.

Taxes on Telephone Companies in New York

By Hugh Taylor

The word "Taxes" invariably conjures up a disagreeable business before the mind of anybody who hears the obnoxious word in New York state.

In an office the duty of keeping account of the taxes, examination of tax bills, and handling the necessary detail for payment is looked upon as almost equivalent to a term in the penitentiary; that is, until one is forced into the position of tax manager, for it is a position no one voluntarily seeks. After the tax manager has courageously tackled his job, his ideas commence to clear up little by little, and he is surprised to find that the subject can be made one of absorbing interest.

Why is it that we see so few articles in our magazines about the subject of taxation? It cannot be because the amounts involved are not large enough to require attention.

The companies now operated by the Federal Telephone & Telegraph Company covering the western half of New York state, paid a total of $44,975.22 during the year 1908, and the indications are that this amount will be increased for the year 1909.

The subject itself is interesting to any one who will take the time to study it, but it requires a lot of time. Perhaps therein lies the secret of the little attention given.

The business of keeping account of the taxes, examining the tax bills, and handling the necessary details for their payment requires the expenditure of much thought and study, but the work is well rewarded.

We doubt if any telephone company operating over a large area, and which is not giving the closest detailed attention to its taxes, has any idea of the amount that it may be paying erroneously owing to the loose manner in which taxes are assessed and collected. For the purpose of illustrating this point it may be stated that the tax department of our company kept one record for a term of forty-four days of the errors made against the company and in favor of tax officials, and finds that it has amounted to the astonishing average of $3.35 per day.

The performance of a great amount of detailed work of a very particular nature must be gone through, or pecuniary loss will be the inevitable result.

Some day perhaps New York state, instead of having one of the worst systems possible for the levying of taxes, will take its rightful place among the leaders, but that day is yet afar off.

If it were the intention of the state lawmakers to discourage the operation of wire-owning companies in the territory under their jurisdiction, they could hardly devise a more effective way than to force them to go to such a large expense for checking up and paying their taxes, not to mention the large amounts these aggregate in the lump. It behooves corporations which are affected in this way to get together and try to have proper legislation passed, so that some simpler form of taxation can be adopted. Under the present system, unnecessary expense is incurred, which benefits neither the state nor the corporations.

It would be a very interesting study to trace out the evolution of the tax laws of New York state. Most of us can remember having seen some town which has grown up on the banks of a winding river, or on the seashore, and trace the resultant confusion of streets which have grown to larger proportions than the first street makers had any idea was possible. This is an illustration of the way tax laws have grown up, based on the primitive idea, still adhered to in country towns, that everybody must go personally to the tax collector's office and pay his taxes in hard cash. The first laws framed did not contemplate the possibility of any one person, or corporation, paying taxes in a number of districts ,and by check. Yet no radical change has been made with a view of overcoming the resulting confusion. Fortunately it is not so expensive to change tax laws as it is to raze houses and lay out new streets. We need not, therefore, despair of seeing a new tax system put into effect.

The State Board of Tax Commissioners themselves recognize the unnecessary confusion that exists in the tax laws, and any one interested in the subject is recommended to procure from them a copy of their annual report, printed in book form. Besides the portion of the book which is set aside for their report, it contains a very well indexed copy of the tax laws, which are well worth perusal.

In the meanwhile managers of tax departments of wire-owning companies in this state must find their reward in the interest they take in the subject. There is certainly little chance for glory. On the one side they have the officers of their company, who think they are paying too much in taxes, and on the other an army of tax commissioners, collectors, county treasurers ,supervisors, school boards, etc., who think they are not paying enough.

Owing to the above mentioned idea of appearing personally to pay taxes, the tax manager is largely dependent on local representatives to go and secure necessary data. In this he is often hampered, owing to the deficiency of the information furnished, and because the local representative is often too busy to give the matter proper attention, or does not think of it at the right time, or does not thoroughly understand what is required of him, difficulties natural enough when one considers the great complexity of the subject.

There are no less than ten divisions under which the taxes paid by telephone companies naturally fall. They are:

1. Organization Tax.
2. Capital Stock Tax.
3. Gross Earnings Tax.
4. County and Town Taxes
5. City Taxes.
6. Highway Taxes.
7. Village Taxes.
8. School Taxes.
9. Stock Transfer Tax.
10. Mortgage Tax.

An explanation of these items may be of interest, and is here presented:

Organization Tax: Organization tax is 1/20 of 1 per cent on the amount of authorized issue of capital stock, due and payable upon the organization of the company, or upon any subsequent increase in the authorized amount.

Capital Stock Tax: Capital stock tax has been very much simplified recently, and the amount is fixed at 75 cents on $1,000 annually on the actual amount issued. Until recently the taxes on capital stock were split into three main divisions, dependent largely upon the rates of dividends that were being paid.

Gross Earnings Tax: Gross earnings tax, like capital stock tax, is a tax levied direct by the state comptroller, who sends blanks to be filled out and sworn to by the telephone companies as to the amount of their annual gross earnings. On the amount so declared a tax of $5 per $1,000 has to be paid. If a company has been incor-

porated, but has done no business up to the time the State requires its report, that fact should be stated, or the comptroller will fix a sum as its gross earnings and arbitrarily proceed to levy taxes on it. We are allowed to revise gross earnings tax bills within one year, and if not levied according to law, the amount can be readjusted by the state comptroller. Application for a revision, however, must be made on a special form through an attorney.

The above taxes are the only ones on which rates do not fluctuate from year to year, and consequently are the only taxes on which we can figure the amount we shall have to pay in advance.

County and Town Taxes: Passing on to county and town taxes, we find that property on the highways is assessed by the State Board of Tax Commissioners, consisting of three persons, whose headquarters are at the State Capitol in Albany. This state board gets out a booklet which telephone companies have to fill out annually. They take the value of the property as reported by the companies as a basis, compare it with the value reported by the town assessors, and also take into consideration the earnings shown by the company, the value of the right to be on the highway, and the general business outlook of the company. There is no definite rule guiding these assessors in the performance of their duty, and the rate is very largely dependent on their judgment. They, of course, have large discretionary powers which could easily be abused by persons so willing.

Property on Private Right-of-Way: Property which is not on the highways is assessed by the board of town assessors, and they also give their own reports of property on the highway to the state board to enable the latter to check values against our own report. We have to pay taxes known as county and town (township) tax, the basis for which is the combined total of the assessment placed on our property on the highways by the state board and assessments made by the town assessors on our property off the highways. The rates differ according to varying needs of the different townships.

In August of each year the assessment roll should be completed, and is open for inspection until the third Tuesday in the month, which is "grievance day." On or before the 15th of September a certified copy of the roll is given to the town clerk, and on October 1 the original roll is delivered to the supervisor of the town. The roll is passed upon by the board of supervisors, and on December 15 it is given to the collector. In the meantime the clerk of the board of supervisors has made a transcript of the roll, and turned it over to the county treasurer. On July 31 of the following year all property upon which taxes remain unpaid is sold.

Certain corporations are allowed, as a special privilege, to write to the county treasurer, obtain a statement, and pay within thirty days these taxes by one check covering all the county and town taxes for all the townships in the county for one year, with a 1 per cent fee, which fee is paid to the collectors, although they do no work to collect taxes paid in such a manner. The tax rolls are split up and sent out to the tax collectors in each township at the same time they are given to the county treasurer. These collectors are not obliged to give any notice of the taxes. It is the telephone company's business to find out what they are by writing to the collector, if they can discover his name; and collectors change every year. An additional penalty of 4 per cent accrues after thirty days. If the collector can collect within three months, he gets 5 per cent. After that, he must return the tax rolls, whether collected or not, to the county treasurer, who then proceeds to collect the unpaid taxes at 5 per cent and gives the collector 2 per cent. For the sake of getting the extra 3 per cent, the collector does usually send a notice, seldom until after the 1 per cent period has elapsed. Often the county treasurer does not notify the local collectors that he has been paid, consequently we get notices at 5 per cent long after we have paid. Hence arises the necessity for constant watchfulness on our part, and the keeping of complete records, to avoid duplication of payments.

We usually transact our business with the county treasurer, but often our experience has been that the treasurer's records are not complete, or are full of errors; the errors nearly always having been committed either by the board of assessors or by the clerks of the board of supervisors in sending in their reports to the treasurer's office.

When we find from our own records that the treasurer has neglected to inform us of the tax in certain townships, we enter a written protest, setting forth that we are ready and willing to pay our tax during the 1 per cent period, and standing on our right to be advised of the total amount of taxes we have to pay in such a county, and refusing to pay any additional fees on account of the errors or neglect of the tax officials.

The result of these omissons from the report sent us by the treasurer is that we get, within a month or two, a request from the township collector, with an additional 5 per cent penalty. To this we reply, stating that we have already applied for a bill of this tax from the county treasurer, and setting forth that we must decline to pay the collector, but will wait until the tax has been reported back to the county treasurer as uncollectible, when we stand ready and willing to pay as at first.

City Taxes: City taxes are separate and distinct from county and town taxes, and are governed by the charters of the various cities, each charter being different from every other in many important respects. In the main, however, they are levied and collected in much the same manner as the county and town taxes, except that they can be paid without the addition of 1 per cent for collector's fees.

Companies operating in several cities have to watch their managers in such cities, and have them watch the assess-

	1905		1906		1907		1908		1909		1910		1911		
	S. F.	Local	S. F.	Local	S. F.	Local	S. F.	Local	S. F.	Local	S. F.	Local	S. F.	Local	
Amount Reported (New)															
Less Depreciation															
TENTATIVE															
FINAL															

Form 1.—By Means of this Table of Assessments Carefully Filled Out, Considerable Saving Can be Made in the Amounts Paid as Taxes.

ments and obtain bills for taxes, as the city officials are under no obligation to send notices to the main offices, and penalties will probably be incurred if a complete record of dates on which assessments are fixed and taxes levied is not kept and followed up.

Highway Taxes: Highway taxes are levied under two

Miles of Pole Line	Average Number of Poles per Mile	Kind	Height	Age	MILES OF WIRE					OVERHEAD CABLE				
					Copper	Iron	Size	Age		Number Feet Cable	Number of Pair Wires	Size	Age	

Form 2.—Used for Inventory Purposes. From this Form the Value of Property Appearing on Form 1 is Taken.

different systems, according to the election of residents of the various townships, the basis of each being the "Labor" system.

Under the "Labor" system, the assessment is made out relative to a certain number of days' labor on the highways, which each inhabitant is supposed to perform. (Another survival.) This labor may be commuted for money. Under the "Money" system, the assessment is levied so that each person will bear his proportionate percentage of work contracted for by the highway commissioners. These taxes are payable immediately on demand, but no penalties seem to have been provided for delinquent payments.

The previous year's county and town tax roll is used as a basis for assessment, and each male resident, whether property owner or not, must be responsible for at least one day's labor.

Village Taxes: Village taxes have also to be paid, and the assessment levied by the state board and by town assessors is usually adhered to by the village assessors. They have, however, the power to make their assessment independently of the assessment of the town board, and if their ideas of the value exceed the ideas of the town assessors, they have a perfect right to levy such increased assessment. The rate of tax is subject wholly to the village board, and is spread over the various village needs, such as lighting, paving, etc. One point to be watched most closely is to see that the taxes paid on assessments in each township on property *outside* the village does not exceed the total assessment for the entire township when added to the amount assessed in the villages. Another is to see that taxes are not paid both in villages for street purposes, and again on highways for road purposes. In other words, the village assessments can be deducted from the total town assessments, and the remaining assessment is all that can be apportioned for highway tax.

Villages are divided into four classes, according to population, and the procedure relative to assessment, hearing of grievances, etc., is different in the different classes and is done on different dates.

Assessors of villages of first and second classes complete assessment roll on or before the first Tuesday in June, and assessors of villages of third and fourth classes complete the roll on or before the first Tuesday in May. Grievances are heard and determined on the second Tuesdays in June and May, respectively, and rolls filed with the village clerk. Fifteen days later they are given to the collector, who collects with 1 per cent additional for thirty days and 5 per cent for the next thirty days. Rolls are then returned, and the village treasurer acts as collector until the date for sale if then unpaid.

School Taxes: School taxes are the most complicated of any. The property of a telephone company in any single township may be located in school districts numbering all the way from one to twenty. Each one of the twenty school districts in the same township has its own rate, and the rate fluctuates violently from year to year, according as to whether the district in question wants to build a new school house, hire an additional teacher, or increase a teacher's wages.

School taxes, because of the different dates on which they may be assessed, are the only ones for which the law insists on notice being given by the collector, and the collector is required to give twenty days' notice, during which twenty days the school taxes can be paid with a 1 per cent penalty. If not paid within the twenty days, the penalty is 5 per cent. The theory is that school taxes must be paid within thirty days after the spreading of the taxes, and after the thirty days the penalty is 5 per cent. The collectors naturally wish to get the 5 per cent, so their custom is to wait until the last day of the thirty days before sending the notice in, so that it is impossible for a person receiving the notice to pay within the thirty-day period. People who are not aware of the provision of the law which makes it obligatory on the collector to give twenty days' notice irrespective of the thirty-day period are liable to be roped in to the tune of 4 per cent additional fees.

Owing to the great number of school districts, the fact that no definite date is set for their assessment, the fact that some are levied annually and some semi-annually, and the ignorant character of the collectors, who as a rule can hardly write a legible hand, the work of keeping track of and paying taxes is a Herculean task. The schools themselves undoubtedly lose a great deal of money, owing to the system in use, as many school taxes that could be levied are never collected. In theory, the amount of assessment on which school taxes are paid in any given township should equal the combined assessment levied by the state board and the town board, but probably no attempt is made to collect more than 75 per cent of such a sum.

The most important thing to do in authorizing school taxes for payment is to write to the town clerks, and obtain a copy of the apportionment of the combined special franchise and local assessments as made to the various school districts. You then have an authoritative check on the amounts appearing on the school tax collectors' bills.

Unpaid taxes are returned to the county treasurer, who collects the amounts with 5 per cent additional until directed by the board of supervisors to make a levy, when he collects with 7 per cent additional. The county treasurer usu-

ally collects returned school taxes at the same time he receives county and town taxes for the following year.

One peculiar thing about taxes generally, and school taxes in particular (state taxes excepted), is that you can never find the exact date of the period covered by the taxes you are paying.

Another frequent cause of trouble is that school collectors often give only the name of their own district, when they are in reality collecting for a joint district, the other half of which may be in another town. Notwithstanding this omission on their part, they usually express great surprise and annoyance when they are sent only the amount payable in the district they ask for. No matter what explanation one writes, there always comes back a request to "please hurry up with your check," notwithstanding the fact that they may have been proven conclusively to have made two or three errors in their notice.

Local managers who have to receive notices of taxes from school collectors, and who have to report to a distant office, should always bear in mind the fact that the twenty days' notice to which their firm is entitled free of penalty begins from the instant a verbal or written notice is given to such manager by the collector, and he should always keep the notice and notify his home office of that exact date, no matter on what date he may receive a corrected notice after asking for additional information.

Stock Transfer Tax: This tax is the same as on all companies who issue stock certificates, namely, 2 cents per share of $100 par value every time a certificate is issued or changes ownership.

Mortgage Tax: This is a tax of $5 per $1,000 on all bonds issued under mortgages, payable before the bonds are certified.

When you get through paying all these taxes, and if you have not neglected to give notice of instituting *certiorari* proceedings at the proper time, it is possible to get a refund of part of your taxes by using the figures of the State Board of Equalization as a basis for a claim that telephone companies have been assessed on the full value of their property, whereas other property holders only pay on equalized values. By this means you obtain usually repayment of about 25 per cent of your county and town, city, highway, village and school taxes, the percentage depending upon the state board figures, which percentages vary in each county. Truly a most ingenious way of complicating tax matters.

To throw out a ray of light to those supposedly unfortunate individuals who have to wrestle with the problem, the present article has been written in the sincere hope that it will be of assistance to tax managers of telephone companies in New York, and possibly other states where the laws are somewhat similar.

A note of warning is here sounded against those who attempt to draw up a form of inventory without first making a thorough investigation into the style of information required by the different state, county, town, village and school tax commissioners, assessors, supervisors and other officials of the same genus.

The three forms illustrated have been adopted after some experimentation, and although not always comprehensive enough to take care of unseen ramifications that will occasionally work their way to the surface, yet on the whole they have been found satisfactory.

There is no space provided for school district apportionments, which information is most essential, but we write the information in the very small space between the table of assessments and the inventory.

The three forms are assembled on one printed sheet 8½x11 inches in an I. P. ring binder.

Form 1 takes up about 2½ inches of the top of the verse side of the sheet, and the remaining space is devoted to the inventory, Form 2. Form 3 takes up the whole of the face of the sheet.

Form 1, "Table of Assessments," is arranged to cover the assessments for seven years, giving in the first line the full value of property reported to the state board of tax commissioners for special franchise tax purposes and for local purposes, the distinction being property on the highway and off the highway. The second line gives the value of the same property, with the amount the company estimates as a fair amount of depreciation. The third line is for the value of the property after the depreciation has been deducted. The fourth line is used in filling in the amounts assessed tentatively by the State Board of Tax Commissioners at Albany, and by the board of town assessors. The fifth line is used for the assessments that stand after the fight is over and the smoke has cleared away, and upon these final figures taxes for the succeeding year are based.

Form 2 scarcely needs any explanation, further than to say that the property appearing thereon goes to make up the value appearing on the first line in the "Table of Assessments."

The year in which such an inventory is made should be indicated, and should the property remain unchanged, the word "Same" with the year against it will be sufficient information. It has been found to be a good plan to write the inventory of succeeding years in different colored inks.

COMPANY, COUNTY TOWN

Voucher Number	Kind	Dist. No.	Year Ending	ASSESSMENT		Rate	Collector	Date Paid	Check Number	Amount	
				Sp. Fran.	Other						

Form 3.—Tax Sheet Upon Which a Full Record of Taxes Paid by the Company for its Exchanges is Kept.

For instance, the year 1905 is written in black ink, year 1906 in red ink, year 1907 again in black, and year 1908 again in red.

Form 3 contains the name of the telephone company, the county and town.

As soon as a letter or notice of tax comes in, that letter is immediately attached to a voucher cover, a quantity of which have been numbered from one up. All succeeding letters or documents which in any way refer to this tax, including the final receipt, are similarly attached to this same voucher cover, and when ready for entry, this voucher number is put in the first column on the left of Form 3. The second column indicates the kind of tax, such as county, town, village or school, etc. The third column is used for the school district number. "Year ending" indicates the date covered by the tax. Occasionally it will be found necessary to make a special notation, as taxes in some districts are assessed semi-annually. The spaces for "Special Franchise" and "other" assessments are intended for the dollars representing such assessment on which the tax in question is paid. The rate is also inserted, as well as the collector's name, and the amount is filled in. So much is filled up by the tax department.

The sheet is then handed to the treasury department for payment, and the treasury department stamps in the date and number of the check, returning the check and tax sheet to the tax department, which attends to the mailing and procuring of a receipt. If desirable the check is accompanied by a voucher from the treasury department to be signed by the tax department, indicating the tax voucher number. The tax department's records thus become a part of the regular accounting system, and full details of any tax can be immediately traced by the accounting department through the pay voucher, which gives the number of the tax voucher, where all details relating to any one tax are immediately available under one voucher cover.

Employers' Liability for Accidents*

The liability of employers of labor for damages on account of bodily injuries suffered by employees, as well as other persons, through the negligence of the employer, has been a part of the law of all countries for ages. An eminent authority tells us that as early as the year 1500 B. C. the Jewish law provided that "if a master were the means of causing the loss, either intentionally or unintentionally of the eye or of the tooth of his slave, he was bound to let him go free for his eye or his tooth's sake." Again, according to the same law, "if an employer allowed his ox to gore either his servant or a stranger, he was required to pay various compensations to the injured if he survived, or to his relatives in the event of the injury being followed by death."

There is no doubt but that the general doctrine prevailed in earlier times in one form or another, wherever law and order formed a part of the social system.

Gradually, however, there appeared various qualifications of the broad principle, always in favor of the employer. Among the earliest and most important of these limitations, was that no injury can be occasioned to one who willingly consents to it; and this is perhaps the origin of the far reaching and important doctrine of contributory negligence. It appears, however, that the common law favored strangers or the public more than employers, and this, together with the ever changing conditions of trade and business, as well as changed relations between employers and workman, was no doubt the main reason for the introduction of special laws on this subject. New laws have been made, amended, adopted, and these have been followed by more laws and more amendments.

I wish to call your particular attention to an amendment of the Civil Code of the State of California, relating to the responsibility of employers for injury to, or death, of employees.

You will notice by this amendment, which was passed Feb. 12th, 1907, that the employer has the short end of the stick, so to speak. It is not necessary to read the amendment in full, but I will dwell on the particular points, so that you can have an idea of the extent of your liability.

The employer is liable when an employee is injured, because of the wrongful act, neglect or default of any agent or officer of such employer, superior to the employee injured, or of a person employed by such employer having the right to control or direct the services of such employee injured. The same condition prevails should a co-employee of another department through neglect or carelessness cause the injury. Knowledge of an employee of defective equipment, ways or appliances of his employer, shall not be a bar to recovery for any injury or death caused thereby, unless it should appear that such employee fully understood and appreciated the danger incident to the use of such defective equipment, and thereafter consented and continued to use same.

After the accident has happened it is extremely hard to ascertain conclusively that the injured person fully understood and appreciated the dangers incident to the use of any apparatus or appliance that might have been defective, especially after some "shyster" lawyer gets his clutches on him.

The feelings of an employee to his employer, no matter how pleasant past relations have been, usually are not very kind after the employee or relative or intimate friend has been injured. Statements are made in the stress of excitement which on sober thought would not be uttered. Various meanings can be taken from statements and what is meant to convey one impression, can, by clever handling, be understood to mean something radically different.

The accidents which do not result in damage claims or suits are a rarity and not infrequently the claim is for an amount which, if allowed, would be the cause of not a little embarrassment to the employer.

It is not my intention to state here that the employer is never at fault and not liable for accidents. Neither do I state the contrary. But I can tell you how to safeguard your interests so that they will be properly taken care of, be you right or wrong. To fight a suit through the courts is an expensive proposition, yet you feel, no doubt, such a course should be followed if the liability for an accident does not rest with the company. When it does seem to be up to you, naturally, you wish the matter closed with as little trouble and notoriety as possible.

I firmly believe that there is but one way in which such matters can be properly handled and that is through the agency of a casualty insurance company. Good companies will indemnify employers against loss or expense arising or resulting from claims upon them for damages on account of bodily injuries or death accidentally suffered. There are usually restrictions as to the employment of children under

*A paper read by Mr. Leland B. Servis of the Aetna Life Insurance Co. at the meeting of the California Independent Telephone Association, Covina, Cal., Jan. 23, 1909.

certain ages, or the assumption of contracts which may carry different risks.

When notified of an accident the insurance company immediately puts forth its efforts to obtain full details of the occurrence, how it happened, etc., gets statements of witnesses and where possible, of the person or persons injured.

Wihout violating or abridging the rights of the injured persons, it takes the necessary steps to protect the rights of the employer. On account of the large and well trained force at its disposal it is better fitted to handle such cases than the majority of employers of labor. You are in the business of handling and operating telephone lines. The insurance companies are handling a different class of work, and it's every man to his trade.

If a damage suit results the legal force of the insurer is brought into play and devotes its entire time and ability towards bringing the case to a successful ending. When a settlement is deemed best such a course is followed up to the limit of the amount named in the policy, which is usually a stated amount for any accident. In any case the employer or insured is called upon very little to give assistance, yet he is free to offer both advice and help to the insuring company.

In such a business as that of a telephone company it is the unexpected which happens, so it behooves you to put yourselves on the safe side. One fatal accident may cost you more than a policy will for several years and again you may not be called upon to adjust one for a long time. But don't rest behind the bulwark of fancied security.

Central Office Locations*

By S. D. Levings

Having determined the exact location, it is necessary to settle upon the type of building to be constructed, or other means to provide a housing for the switchboard and associated apparatus. From all that can be gleaned from past experiences, it is very desirable for the telephone company to own its own buildings and the property upon which it is constructed. There is one influencing factor to be considered in making a decision as to ownership. Where a franchise is granted a telephone company, it is usually limited to a specified time, ranging from twenty to thirty years, and it is impossible to predict what will occur after the expiration of the franchise. Municipal ownership of all public service corporations is becoming popular throughout the country, and especially in the smaller towns. These franchises generally contain a clause stating that the city has the right to purchase the plant at the expiration of the franchise for its appraised value, or has the right to force the company to remove its plant. When considering the office building from the renting standpoint, as against ownership, the franchise period must be considered together with the rental. If the sum of the annual rentals does not closely approach the cost of constructing and maintaining a building for the life of the franchise, it will probably be economical to rent. This will be found true, however, in only the very small towns. It is generally found that for an exchange 500 telephones or less this procedure will be most economical. Where the reverse relation of rent and construction charges is foreseen, it will be found advisable for the telephone company to construct and own the telephone exchange building and lot.

There are many good features in favor of this latter proposition. The ground and building are an asset to the company, and on the supposition that the city may take over the plant at the end of the franchise period, they would probably be appraised for considerably more than was paid for them, and in this way, earn money for the company. Requirements of exchange construction are unlike those for any other type of building, and for this reason remodeled buildings are never entirely satisfactory, and the newly constructed building again has the advantage over the rented property. So, from all that can be argued pro and con, it usually seems advisable for the telephone company to construct and own its buildings.

As previously stated, exchange construction is unlike ordinary building construction, in many of its details, and for this reason, special consideration must be given each particular case, in order that it may meet the needs for which it is intended. It is impossible, owing to the limited space and plan of this article, to give detailed attention to all of the requirements of the average telephone exchange building, and it is, furthermore, impossible to give any set of rules for guidance which may be followed for all cases. There are, however, several important features that should be included in the design of any and all exchanges, and the following matter will be devoted to the discussion of these features, in sufficient detail to permit of the reasons for their incorporation being fully understood.

Enough has been said in the section on exchange building location to fully emphasize the necessity of providing against the hazard of fire by exposures to structures without the exchange building. If such precautions are taken to preclude the possibility of damage from outside causes, it is only logical that equal precautions should be taken to insure against the hazard of fire from inside causes. Therefore, where a telephone exchange building is subjected to outside exposures, in close proximity to it, it should always be of fireproof construction. Where isolated on all sides from the nearest building by a space of 50 feet, and where it is positively known that this space will always be free from encroachment by other buildings, the exchange building may be of mill construction, or slow burning construction. The specifications for fireproof construction stipulate that all walls, floors, beams, columns and other members of the structural part of the building be either of steel protected by concrete or of concrete. The walls, of course, may be of brick. The specifications for mill or slow-burning construction, stipulate that timbers may be used for beams and columns, which timbers, however, shall not be smaller than 8x10 inches. They further stipulate that the ordinary joist supported wooden floor may be used. All walls, however, are to be of concrete or brick. All partitions in fireproof construction are required to be of concrete or fire tile, bonded in mortar, while all partitions in mill or slow-burning construction may be of wood faced with metal lath, upon which a good coat of plaster shall be placed. There are modifications of these two types of construction, which embody some of the features of each, such as a fireproof building having mill constructed partitions, but it is not deemed advisable to mix the specifications in this manner, and insurance rates

*Continued from issue of July 31, 1909.

will not be at a minimum if such plans are followed. Therefore, when exposures situated as outlined above are present, the general type of building to be constructed is either of fireproof or mill construction, as the case may be. As time goes on, it is being learned that the concrete building is one of the most, if not the most, desirable types of construction, and that it is but slightly more costly than mill construction. In some localities it has proven cheaper than the fireproof building employing steel as a frame work. Owing to these facts, it is recommended that before deciding on mill construction, where this is permissible, a cost comparison be made between such construction and the all-concrete type. Where the cost of the concrete construction is less than 5 per cent more than that for mill construction, it is recommended that the concrete be accepted, as it is generally conceded that the advantages gained by additional strength, etc., are worth the additional expenditure.

At this point, and relative to this subject only, for the present, it becomes necessary to introduce the subject of automatic telephony, considering it only with relation to the exchange portion of the plant. It is evident that the type of apparatus used will not affect the type of construction to be employed, as the apparatus in each case demands the same amount of protection against fire. The main difference that presents itself, in designing exchange buildings for the manual or automatic apparatus, is in the arrangement of the interior. Automatic telephony is what the name implies, and where such equipment is used, the operator is eliminated. In the manual system where these operators are employed, provisions must be made for rest rooms, and the operating room must be designed with special attention to light, heat, ventilation and proper isolation, so as to be free from the noises of the street. In such an exchange, nothing but the switchboard and chief operator's and other desks are permissible in the operating room, and all other apparatus used in operating the exchange must be installed in other quarters within the building. Where automatic apparatus is used, the space for operators' quarters may be omitted, and the wire chief's desk, power plant, main and intermediate distributing frames, repair benches, etc., may be installed in the switch room, as the presence of extraneous noise is of less consequence. From the few restrictions noted, which must be considered in designing exchange buildings for the manual or automatic switchboards, it will be clear that the design of a building for either type of apparatus should be placed in the hands of those familiar with the requirements of the system to be installed.

There is but one way of obtaining good results, in exchange design, and that way is described in the following: It is not good practice to place the designing of interior portions of the building in the hands of local architects, who have never had experience along these lines, no matter what their reputation may be in general work. The usual procedure is to furnish such an architect with a set of floor plans, and instruct him to build four walls around such floors, and to do all other necessary work in furnishing complete plans and specifications for the construction work. These floor plans which are furnished the architect are usually made up by the manufacturer of the

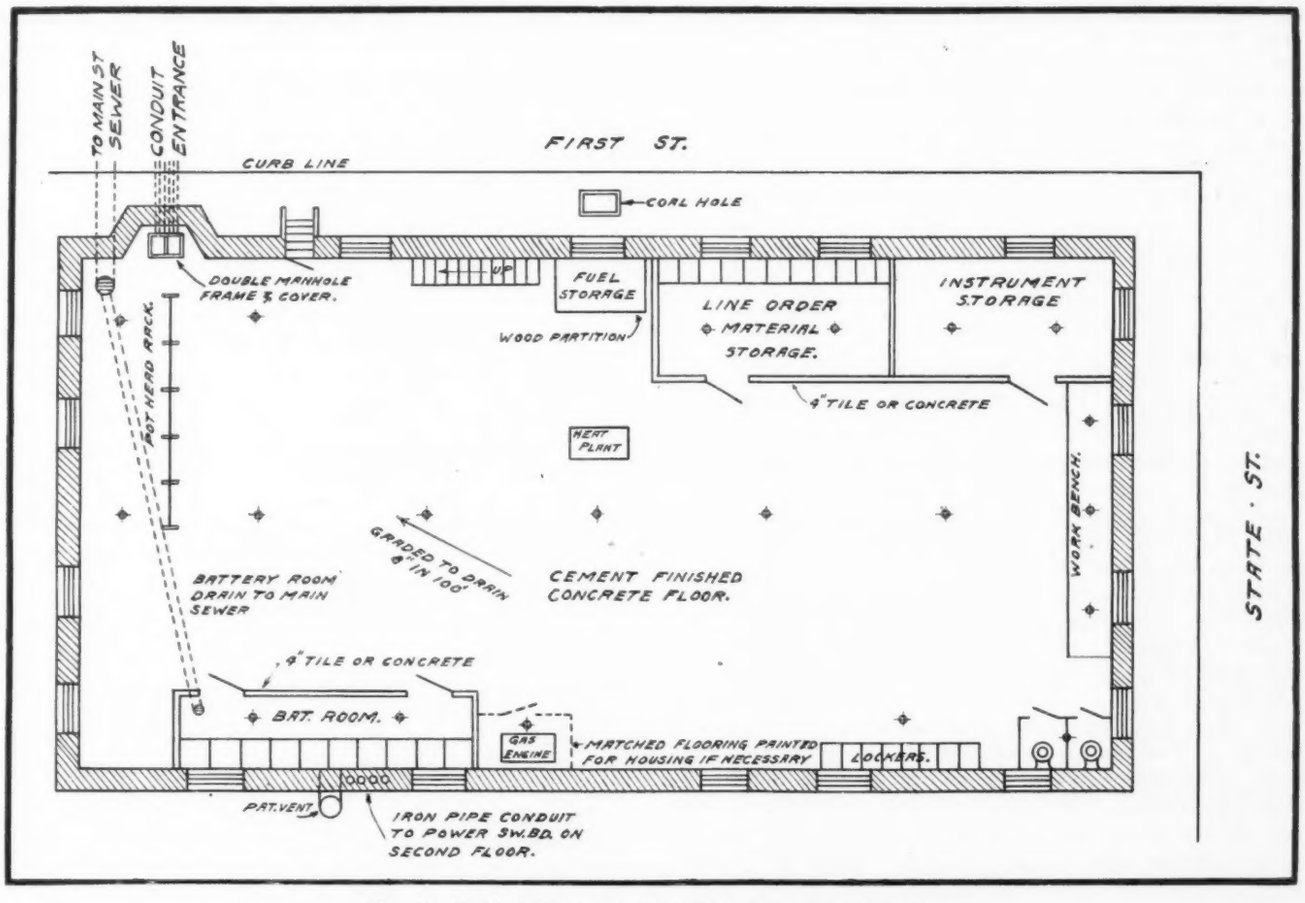

Fig. 11.—Typical Basement Floor Plan for a Manual Exchange.

equipment to be used. The telephone company, when requesting bids on apparatus, furnishes a plot of the lot upon which the building is to be constructed, together with all necessary details governing the amount of equipment required. The manufacturer generally retains an expert, among whose duties is the drawing up of floor plans. When the bid is submitted it is accompanied by a set of blue

prints which show the exact location of the apparatus the manufacturer proposes to furnish. The proper authority for the telephone company then goes over the bids and plans, and selects the bid that is most acceptable. The plans rarely affect the question of acceptance, as they can be altered to suit the telephone company in any detail. As there are many different types of apparatus, and as lots vary in size and shape, it is rarely possible to make one set of plans do for more than one installation, but for the purpose of setting out important details that should be included in all plans, it is proposed in the following to show some typical floor plans for both manual and automatic apparatus, and to describe the general characteristics of each.

BASEMENT FLOOR PLAN.

The essential features of the basement floor plan are common to both manual and automatic exchanges, but are located in dissimilar places: A typical basement floor plan for a manual exchange with the conduit entrance located as at *D* in Fig. 9, is shown in Fig. 11. The floor should be of concrete, finished with neat cement mortar, and should be drained to the nearest point to the street sewer by a grade of not less than 8 inches in 100 feet. Sewer connection should be made by means of standard sewer tile, with back water trap, and the opening into the basement should be protected by a cast iron strainer. An entrance for the underground conduit should be made by recessing the wall, and the ducts should be carried flush with the inner surface of the wall. This entrance should be made for the maximum duct capacity, and dummy ducts should be installed in the wall where not installed in the street, so as to allow of connections to the future street ducts and thus provide an entrance to the building. Where concrete walls are constructed, the forms should be built around such ducts, and the concrete poured so as to thoroughly surround them. Where brick walls are built, the brick should be battered at the ends of the ducts and bonded to them with mortar.

A sufficient space should be allowed for the installation of a pothead rack, upon which the underground cables are to terminate. The pothead rack should be located directly under the main distributing frame which is located on the upper floor, as the building cables from the pothead rack are to terminate on this frame. As stated before, the conduit entrance should be determined when the pothead rack line is obtained. A free working space of at least three feet is required on the sides and ends of the pothead rack, and such space should be allowed for in locating the main frame and rack.

The storage battery plant, where possible, should be located in the basement. This battery, in all but the very small exchanges, is of considerable weight, and when installed on an upper floor requires reinforcement of that floor, which is an unnecessary expense. Another reason why an upper floor is objectionable is found in the fact that acid fumes are continually rising from the battery, and these fumes are injurious to wood and metal work unless specially protected. When it is necssary to place the battery on an upper floor it should be housed in the same manner as described in the following, for basement locations. When locating the battery plant in the basement, it should be placed as nearly as possible directly under the power switchboard, which is located on the upper floor. Connection between the two is made by heavy copper wire, and this connection can be made in the neatest and most economical manner by such location. The battery room floor, being a part of the basement, will be of concrete, but should be especially drained. A sewer connection should be installed of the same type as for draining the basement, and the draining should be obtained by grading the floor, such grade being not less than 8 inches in 100 feet. This drainage is necessary because the cells require washing out at intervals during their period of service. It is generally possible to so locate the battery room as to use one of the basement walls for one wall of the room. The other walls should be of fire tile, properly bonded with mortar, and need not be finished on either side. The ceiling, however, should be plastered. With this type of construction, a room impervious to the acid fumes is assured. Particuar attention, however, must be paid to carrying off these fumes, as it is necessary to enter the battery room at frequent intervals. Ventilation can be secured by means of standard metal ventilators, or, where possible, by means of combined skylight and ventilating. In all cases such ventilators or skylights should be water tight and all metal parts should be coated with mineral paint to preserve them from attack by the acid fumes. Good lighting in the battery room is not an essential feature, and where not attainable by windows or skylight, incandescent lights may be installed, using porcelain sockets and fixtures, with weatherproof wire. A water tap is desired in the battery room, with means for connection to garden hose, for washing out the batteries when required. When space permits, two openings should be provided in the battery room, as such an arrangement provides for the maximum time efficiency when replacing batteries in case of emergency. The doors for such entrances may be of the ordinary type, but should be painted on the inside with a mineral paint as protection against the acid fumes. As the battery plant furnishes the current used in operating the exchange, it is a most vital portion of the equipment, and every precaution should be taken to insure its protection. For this reason the doors into the battery room should be provided with Yale locks, to guard against the entrance of unauthorized persons.

In most installations, either manual or automatic, two sources of power to drive the generator for charging the storage batteries are provided. One source is the electric power furnished by the local company, which is used to drive a motor direct connected to the charging generator, and the other source of power is a gas or gasoline engine which is direct connected to a separate charging generator. This gas engine unit, like the storage battery plant, is of considerable weight, and this, coupled with the effect of the vibration distributed by the gas engine when running, and its noise, makes it desirable to place such an auxiliary unit in the basement. It should be located reasonably close to the battery room, as connection must be made from the generator of this unit to the power switchboard on the upper floor and thence to the battery. The vibration of the gas engine makes a separate foundation necessary, which should be of brick or concrete and constructed at the time of laying the basement floor. The proper dimensions for this foundation can be obtained from the manufacturer of the gas engine. When the basement is sure to be dry, no housing need be provided for this unit, the canvas which is usually furnished with it being sufficient to exclude all dust and dirt. When moisture is liable to be present, a wooden housing should be provided, made from matched lumber and painted, to make it as moisture proof as possible.

In the past the method of removing dust from a switchboard has been to blow it out with hand bellows. This at best is an unsatisfactory method, as the power thus obtained is not sufficient to entirely remove all dust. It is recommended that in all installations a mechanical blower be provided, driven by an electric or a water motor. When a water motor is used, in connection with either type of equipment, it should be located in the basement in a convenient place to drain. When the blower outfit is installed

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in the basement, pipe in the walls should be provided, with outlets in the apparatus and operating rooms, equipped with suitable connections for rubber hose. Where the electric motor is used in the manual exchange, it may be installed in the aparatus room, and piped to the operating room. Where the electric motor is used in the automatic exchange, it may be installed in the switchroom.

The heating plant is, of course, to be installed in the basement. Two types of heating systems are commonly used, the steam and the hot water. On account of the moisture introduced by escaping steam, and the attendant noise, it is recommended that for exchanges of moderate size only hot water systems be considered. The boiler should be so located in the basement as to be separated from any wood partitions by at least 10 feet. Provision must be made for fuel storage, where coal is used, and this storage should be located so as to make a minimum haul from the bin to the furnace door. It is preferable to use gas where the cost is not prohibitive, as this fuel is clean and permits of accurate regulation and requires but little supervision. Where coal is used damper chains from the furnace may be carried to the operating room to allow of regulation by a night force.

Fig. 12 shows a typical basement plan for an automatic exchange, where the conduit entrance is located in the position designated by *E* in Fig. 9. The type of apparatus to be used does not affect the location of the conduit entrance, but for the sake of illustration, showing the points at which entrances are most commonly made when the exchange building is constructed on a corner lot, Figs. 11 and 12, have been laid out, each having an entrance located in a different position. A comparison of Figs. 11 and 12 indicates that the same features of design are present in each, the difference being in the location of the necessary apparatus. It will be noted presently that the first and second floor plans, for each type of exchange, automatic and manual, are designed so that the apparatus contained on these floors will be located with reference to the apparatus in the basement. In drawing up floor plans, it is not desirable to consider any one plan as a whole, the relation between them making it necessary to consider all plans at one time. For this reason the accepted method in laying out floor plans, is to place three sheets of drawing paper adjacent to one another, numbering them 0 for the basement plan, and 1 and 2 for the first and second floor plans respectively. Before beginning the work of noting the locations for the various pieces of apparatus, a mental picture of each floor should be created. Then, for instance, the entrance location for the conduit having been decided upon, it should be drawn in on the basement plan. The apparatus, the location of which is dependent upon the location of the pothead rack, should then be noted on the floor plan, on which it is to be placed, and in such a location as to conform to the pothead rack location opposite the conduit entrance in the basement. In this way, the relative locations for the various pieces of apparatus can be kept clear, and the resultant plans made in such a shape as will guarantee the proper and economical layout. The shortest possible distance between pieces of apparatus bearing direct relations to one another is desired, and for this reason especial care should be exercised in the manner indicated, in locating the apparatus on the different floors. Two plans have now been considered, both basement plans, one for a manual exchange, and one for an automatic exchange.

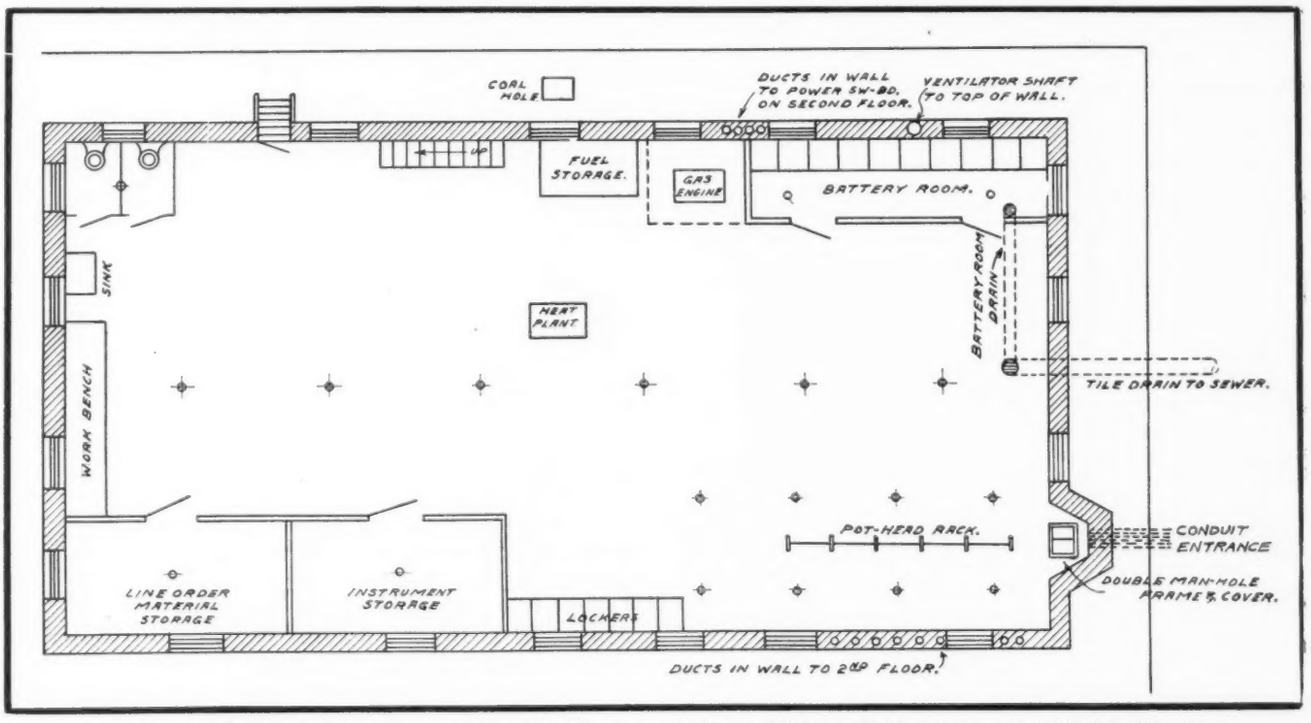


Fig. 12.—Basement Plan for an Automatic Exchange Using a Different Entrance from that Used in Fig. 11.

(To be Continued.)

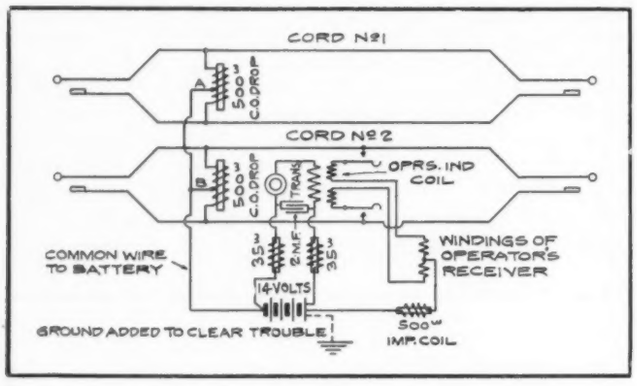
Acquiescence in Presence of Company Amounts to Consent.

The city of Paducah, Ky., lost in her contention with the East Tennesese Telephone Company in the Federal court, when Judge Evans extended the injunction of the company, restraining the city from ousting it from the use of the streets until the city offers for sale an ordinance agreed upon by a committee of the council and the company under which the council accepted $3,000 from the company. The controversy was over the rates, and the council refused to ratify the action of the committee. The court held in substance that the city by twenty-five years' acquiescence in the presence of the company was estopped to deny its right to operate.

Letters on Practical Subjects

Grounding Common Battery Clears Cross-talk Between Grounded Lines.

About a year ago we installed a multiple magneto visual signal switchboard in our exchange. In addition we rebuilt the entire outside plant. The old system was all common return or grounded. In the cut-over, which was



Magnet Cord Circuit in Which There Was a Great Amount of Cross-talk and Method of Overcoming It.

made as the outside construction was finished, an almost intolerable amount of cross-talk was encountered. This was ascribed to the connections through both the old and new bonds of common return and grounded lines through cables. This did not satisfactorily explain some phases of the trouble, but owing to other duties prevailing at the time, the subject was not investigated until the entire city exchange had been rebuilt with metallic circuits. It was then noticed that the cross-talk had disappeared except between grounded country lines. Between these the trouble was all out of proportion to what we had expected from these circuits.

An investigation showed that while a metallic circuit line was perfectly balanced into the switchboard, the situation was very much the reverse with a grounded connection. By referring to the drawing of the cord circuit, simplified, it will be seen that the 500 ohm ring-off coil has a split winding, the tap from the center being connected to the tip side of the storage battery. This was to put a busy test on connected lines. It was found that this common connection between the clearing-out signals was causing the trouble. A little study of the circuit will show the unbalanced condition existing when grounded rural lines were connected up. The voice currents would seek earth by all available paths. One of these paths was through half the coil winding to the center tap *A*, thence to the center taps of the clearing-out drops of all cords connecting grounded lines. In dividing equally between line and ground, the currents rendered the split coil of the drop in cord No. 2 practically non-inductive, so the effect was that of wiring two sets of connections together through a 250-ohm coil which had but little impedance.

As an experiment we inserted 800-ohm ringer coils in the center taps of twelve pairs of cords on one position. That removed most of the trouble, but it was impractical to apply the remedy on the remaining positions. The trouble was permanently remedied by grouping the positive side of the battery. Since doing that we have had no complaint from what had been a very vexatious and difficult trouble to locate.

Clay Center, Kan. M. C. Wilson.

The Re-use of Discarded Dry Cells.

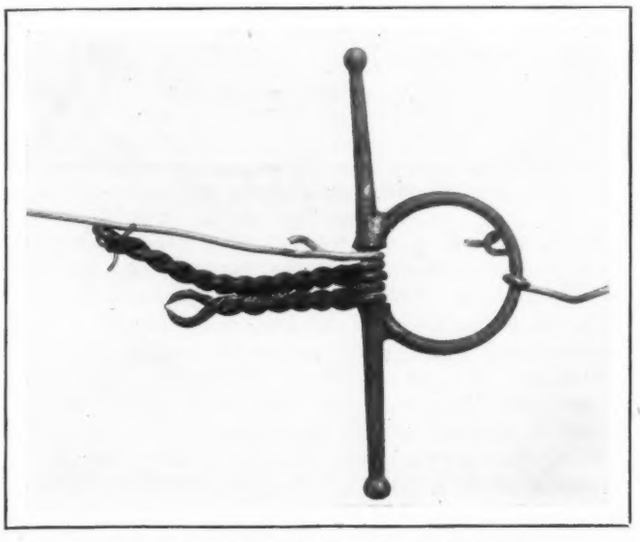
Regarding the re-use of discarded dry cells from telephones by punching holes in them, putting them in jars filled with water, and using them for ringing battery on Warner pole-changer, I will say that this plan works best with cells which have not been properly sealed. In this case, the new dry cell runs down more from evaporation of the moisture than from the using up of the chemicals. Hence, by restoring the moisture by the means described the chemicals yet unusel are made available, and the considerable further use is obtainable. But if the cells have been thoroughly sealed by the maker, and the use in the subscriber's telephone is fairly good, the lost power can be but little restored by rewetting. However, there is no room to doubt that some reviving will occur, as I have tried it myself. Just what voltage and current to expect from the treated cells is impossible to state.

The Latest in Iron Wire Joints.

I am mailing you today a sample of one of the ——— Mutual Telephone Company's connections. It was connected on the main line of a rural telephone line running out of Hamburg, Ark., situated in Ashley county. It had been in service about fifteen months and, of course, the telephone company received the usual amount of kicks and complaints of bad service.

I found one farmer who kicked about his telephone not giving satisfaction, and said the bells had not rung in three months. The telephone people claimed they had a good line, and upon investigation I found that they had a good fence. The main line was connected to a barb wire which encircles a tract of land embracing several hundred acres, with over a mile and a half of barb wire running through the trees, vines and all kinds of foliage. I had my men go over the fence, and found several places where the wires were embedded in pine trees about six inches, covering the knob entirely. I had my men remove those, and subscribers were surprised to hear the bell ring again.

The Mutuals in this section of Arkansas hang the wires on



Joint on a Rural Telephone Line in Arkansas.

trees and fences, using very little insulation. In places they use the necks of bottles for insulators. The reason why they use bottles is that in this particular section of the state it is not out of the ordinary to find a man having a bottle of snake medicine in his pocket.

Washington, La. F. E. Bell.

Some Undeveloped Uses of Accounts*

By Charles G. Dubois

Comptroller, American Telephone & Telegraph Co.

Efficiency.—The burden of proof rests on every man every day to show that he is positively efficient. It is by no means sufficient for him to be able to defend himself against possible charges of inefficiency.

The same principle applies to every group of individuals acting together as a unit of organization, to every general department, to every company and finally to every aggregation of companies.

Now every piece of inefficient work means that at least one or more individuals have been inefficient, and it is well known that when any one individual is inefficient he not only directly diminishes the efficiency of the whole organization by so much but indirectly he diminishes it to a much greater degree, through his influence on other people and their work.

Efficiency is a matter of life or death to the business as a whole and almost that to the individual. All data bearing on it is, therefore, of the utmost consequence and we are all concerned in having the best data collected and sound conclusions drawn from it.

It is easy to show by statistics that a certain matter should be corrected, but it is painstaking work to prove that it can be corrected without unfavorable reactions on anything else.

In this development of comparative telephone statistics three essentials stand out, viz.: the development of units, the determination of standards and the correlation of data, and these essentials apply not only to company data but also to statistics of departmental and individual efficiency.

Units.—When the gross amounts to be compared vary considerably, as they frequently do, and when comparisons of percentages are not sufficient for the purpose, it is necessary to reduce the data to some common denominator. The most intelligible way of doing this is by the use of some unit such as the station, or the message, or the mile of wire. I do not believe any *one* unit will serve all purposes in considering telephone statistics. Nor has anyone yet gone far enough to say authoritatively what units are most appropriate for all the different classes of such data.

The simplest unit, by which to measure investment, revenue and expense, and the unit generally used, is the Subscriber's Station. Under the conditions that first existed, when each subscriber had one set of instruments and was connected with the central office exchange by one circuit, this was a fair unit; but conditions have changed. Each subscriber does not have one station; some have an extension; some are party lines;—two, four and more on a circuit; some are grouped in private branch exchanges and trunked over one or more circuits; some have separate answering jacks at the central office for each station, some have one answering jack for several stations.

All these different conditions have their effect. This is at once apparent with respect to the revenue, for different rates are made for private branch exchanges, and for party lines, and for extensions, as distinguished from the simple and original form of individual service. The value of a station, as a unit for universal use, is accordingly impaired. It is still a fairly safe average for certain uses because simple conditions still exist in many cases, but it must not be too confidently relied upon.

The average per station for repairs of aerial lines may be low in one company and high in another, but the low company may have many private branch exchanges and party lines. Probably a better method would be to compare the percentages of repairs on aerial lines to the cost of the aerial lines in various companies, or to compare the repairs per mile of aerial wires.

But the mile of wire is clearly not a fair unit for all purposes, as for instance operating wages, which depend chiefly on the number of calls, though even here we have to consider the effect of irregular calls. Various schemes of so-called weighted units are proposed, meaning thereby different relative values for different clases of transactions when the total expenditure for all cannot be subdivided. The fairness of the weighted unit depends directly on the accuracy with which these different relative values are calculated, and unfortunately from the nature of the case, they are usually more or less arbitrary.

These few comments will perhaps indicate the possibilities and opportunities before us for the development of fair units.

Standards.—Having established and defined the unit for any particular class of data we have then to say what figure is the standard on one side of which a result is satisfactory and on the other side of which a result is unsatisfactory. To illustrate—suppose we conclude that the mile of wire is the most suitable unit for comparing the cost of repairs to toll lines, one with another. Suppose we find that the actual figures on this vary from $1.00 per mile per year to $3.00 per mile per year, but that we find a number of cases, not known to have exceptional conditions, are around $1.30. The practical way to make use of this data is to let everyone responsible for the repair of toll lines know that there is a standard $1.30 which (with all reasonable allowances for exceptional cases) he is not expected to exceed, while bettering it will be to his credit.

Can anyone doubt the practical good that would result from the use of only this one statistical standard? Nor is this a theoretical measure. It is the basis of modern scientific piece work. It is the principle followed in many of our own companies as to operating loads. It is equally, though perhaps not so easily, applicable to other operating and maintenance work, to construction, and to routine clerical work.

Correlation of Data.—The third essential toward getting the full use of telephone statistics is the correlation of different kinds of data. This affords an unlimited opportunity for the exercise of ingenuity, enterprise and sound reasoning. Here we pass out of the field of simple arithmetical comparisons and have to consider what data has a bearing on the telephone business and of this what we will select as likely to throw light on any particular phase of the business. It is evident that if we start at random we shall soon be lost in a maze of figures. We must then fix our minds on some particular purpose, some specific question and gather around that whatever seems to bear on it. Then we must study and judge the bearing of each part of this data on every other part. This is not peculiarly the work of an accountant or statistician. It is exactly what every clear-headed administrator who bases his actions on knowledge and reason tries to do. This is perhaps worth an illustration. From one source of information the administrator knows the rate of net increase in stations for a certain period and from other statements he

*Abstract of a paper read before the New York Telephone Society.

learns the rate at which net investment in plant is increasing. His first thought then might be that if plant investment has in any period increased less rapidly than stations the general situation justifies certain recommendations for extensions. But on reflection some other questions arise as to that general situation.

Suppose the net increase in stations was 3 per cent for a certain period and the increase in plant investment was 2 per cent. Before the administrator can be satisfied that this is as good a showing as it appears to be he should know—

1. That the stations added were of average revenue producing character or better.
2. That the increased plant investment was of such a character that it will not unduly increase maintenance.
3. That the expense of canvassing for those new stations was not such as to absorb the net earnings from them for an unreasonable period.

All this and perhaps much else is only to satisfy the adminstrator that his business is set up on safe lines, that he is not fooling himself by a few statistics not properly correlated with others, and of course in making his decisions as to specific extensions he must have all the significant facts pertaining to each.

I digress here for a moment to emphasize the importance of having statistical information so prepared and indexed that it is readily available. Unless this is done it goes unused. This does not mean copying and filing data that *may* sometime be wanted. It does mean *foresight*, but to no higher degree than is regularly employed with respect to construction of plant and operating central offices.

In the scientific consideration of the telephone business we cannot as already suggested limit ourselves to purely telephonic data. To properly carry the telephone to its economic destiny we have to be informed to some extent on every subject which bears on communication between people in this country.

Population statistics have a bearing because if there is a less than normal proportion of the number of people having telephones in any territory it is probable that the use of the telephone by those who do have it is to that extent restricted.

Character of population should be considered in that same connection. In the Southern States the negro population, which makes comparatively little use of the telephone, very much reduces the number of subscribers to be expected out of every 1,000 people.

Density of population has obviously an important bearing.

Occupations are also important, nor is this entirely a question of incomes. The average farmer's income is less than the average textile mill worker's, but the business as well as social requirements of the farmer make the telephone of much more importance to him than to the mill worker.

The *area* served by an exchange system ought to be considered in any rate question because it affects either the average length of circuit or the number of branch exchanges and the trunks between exchanges.

To some extent at least the *relations* of *communities* to each other ought to be considered. Nearly every village is a center at which lines of trade and other interests converge. Every city has its tributary territory. The extent of such territory is largely influenced by railway routes and railway rates. It is somewhat affected also by telephone routes and toll rates and clearly telephone routes depend largely on whatever factors go to make up a city's development.

For all these factors statistics are available but their application is only partially developed.

Not for a moment would I give the impression that there are ever to be expected any mathematical formulae which can be substituted for judgment in conducting a business. My plea is only that men who make business decisions should have all the significant facts that are available and should study the relations between those facts. There may be many significant facts from other than statistical sources but the relative significance of all can never be determined so long as the statistical data is unused.

These principles if they are sound apply not only to the great administrative decisions but equally to departmental problems and finally to the question underlying all others —individual efficiency. Let us trace this further through the modern use of an accounting scheme.

Purpose of Accounts.—A scheme of accounts is only a method for getting data as to financial transactions. From the early days of business enterprises the proprietor has tried to learn the results of his ventures. Through all the changes and progress in commercial conditions and methods the keynote of accounting has been to tell the proprietor the effect of his transactions on his wealth.

As the proprietor got further and further away from the detail of his transactions his agents began to take his place and the success of his business came to depend chiefly on his judgment or luck in selecting his principal agents. Finally we come to the modern corporation having thousands of proprietors (or stockholders) and thousands of agents (or employees), the latter because of their great number and the increasing specialization of each one's work necessarily grouped under heads and sub-heads constituting what we call an organization. In all this time until recently the direct purpose of the scheme of accounts has been to show the results of the business in terms of money and only indirectly if at all the relative value to the business of the individual.

Now it is practically established that in this modern industrial scheme the accounts should and can serve both purposes. Only to a limited extent has this principle been yet developed in telephone accounts.

Departmental Efficiency.—There are many difficulties it is true in working this out, but the operations of the main departments of organization should be on such a basis that the accounts of one geographical district can be compared with those of another for the corresponding kinds of work and thus some definite tests made of relative efficiency of men responsible for similar work in different places.

As an illustration suppose the organization includes a department charged only with the duty of making collections of subscribers' accounts and having seven geographical districts. The accounting scheme could easily show the wages and other expenses pertaining to this particular work in each district, not forgetting that rent, postage, stationery, etc., are part of the expenses. The regular problem for the head of all this collection work is how to decrease expense and maintain or improve the standard of service, for his record is bound to be compared with those of other men having similar responsibility elsewhere. He starts by comparing his expense in each district and he finds at once that District B is the highest, but he knows that this district has the largest number of subscribers. Here begins his need for a unit and his correlation of data. Suppose he takes the subscriber as his first unit. He gets the number of subscribers in each district and applying the cost per subscriber finds it highest in District C. But on further thought he questions if District C may not be making collections more promptly than the others, so he gets the figures of the month's collections as compared with the bills rendered. This data indicates that District

C is the best of the seven and District D the worst. Perhaps he finds also that District D not only is losing interest by delay in collections but that its ultimate loss on uncollectibles is larger, although its expense per subscriber is low. The question is now as to the relation between loss on uncollected (including loss of interest on slow collections) and the expense of collections. By experience and study he establishes or there is established for him a tentative standard for expense and for quality of service measured in this case by promptness and completeness of collections. Then he may first require all the districts to improve their service up to the standard and in so doing finds the expenses of some districts increased, but at last he has them all at the standard of service and can begin to talk expenses. District E in charge of Smith we will say has now the highest expense and the burden of proof is right on him.

Individual Efficiency.—Smith is perhaps new at the work but ambitious and energetic. He analyzes the daily duties of his collectors and finds they each make so many calls, travel so many miles, collect so many dollars and so on, and he finds some do better than others. By sundry methods of his own he applies to the individuals under him the same kind of tests that are being applied to him. He explains to them the necessity of getting about more rapidly, of making favorable impressions, and shows them how it can be done. He finds (say) five who greatly increase their efficiency while (say) three do not. But the five best men are now doing the work which eight were formerly doing. The three poorest have to go. Smith thus makes a record which kept up makes him and his methods the standard of efficiency in that work. His collectors are sought for other districts or other cities. Smith's promotion is as certain as a natural law.

I know of course that this only describes a general process you have all seen applied to some extent. I do not seek to draw from it any great moral lesson, but I venture the opinion that this simple principle of gauging men's efficiency by their records of performance is the chief cause for the superior efficiency of some corporations as compared with others, and of some departments as compared with others.

Dealing with the Individual.—Let us turn now to the actual use of statistical data in administration. There is on the one hand a disposition to use uncorrelated facts as proving points which have varied and often complicated elements. A warning as to the dangers and injustice of this is not out of place here.

On the other hand there is often a reluctance to use statistical data in direct dealings with the individual. This, I believe, is partly because the administrator has not thought out to its logical conclusions just what the data means, and hence finds it easier to deal in glittering generalities.

He has also some feeling that the presentation of a disagreeable record amounts to a charge of inefficiency. In my view it is rather to be taken as a method of giving the individual an opportunity to prove his efficiency, or to show the steps he means to take to remedy his relative inefficiency.

Whenever figures showing a poor record are put up to any man his first natural impulse is self-defence, and the form of his defence in a great variety of expression quite commonly amounts to one or both of these two explanations:

1. The figures lie.
2. My conditions are different.

Now since either of these excuses may have some degree of validity let us examine them further.

The excuse that the figures lie is rather dangerous, since the true figures may be even more damaging than the false. No one should have the temerity to make this answer, unless he has at least some circumstantial evidence to support it. Such evidence ought to be followed by a refiguring. Suppose such evidence is plausible enough to put the burden of proof on the man who prepared the figures. He should then outline the sources from which the figures are derived, and his reasons for his method of figuring. His reasoning should be accepted unless better reasoning is shown. His sources of information, if unbiased, should be accepted unless shown to be erroneous. If the information comes from a biased source it should of course be corroborated by other and unbiased evidence.

Again it is usually possible for the administrator by simple processes to decide whether any given figures are substantially accurate or substantially inaccurate. This, for the purpose of testing individual efficiency, is more important than arithmetical accuracy.

But suppose the net result of the discussion along these lines as to any particular figures is that inefficiency is not proved. None the less the burden continues to rest on the individual to prove that he is efficient.

The plea that different conditions extenuate an apparently poor record should not carry much weight unless there is some evidence that the difference in *conditions* compares fairly with the difference in *records.*

Of course no two situations in the telephone business are exactly the same, but the end and aim of all our telephone service is fundamentally the same, we all have about the same chance at getting informed about our work, and we all have some responsibility for our conditions being what they are.

It is true that we all have some peculiar advantages and some peculiar disadvantages as compared with each other.

But a careful analysis of differences in *conditions* will, I think, generally result in exposing differences in the *efficiency* of *men* in dealing with their conditions, assuming of course that all the data has been properly correlated.

Vague and Useless Records.—Now having thus dealt with the possibilties of using data for gauging efficiency it may possibly strike some of you that I am urging a wholesale increase of records and accumulation of data in addition to those already existing.

In its final analysis I believe the policy I urge is exactly the reverse of that. I have little use for the kind of records that are vaguely justified as being "of general interest" or that "we may want to refer to."

I urge in their place records having a specific purpose, bringing forward definite data for actual use in making business decisions, and especially I urge that when such specific purposes have been served the data be discontinued.

Every figure put on paper by a telephone employee has to be paid for by the telephone user, or the telephone investor. If that figure goes toward the building up of a significant fact *which is used,* it is likely to be worth what it costs. But the records and figures which serve no real specific purpose or which cost more than they are worth are a luxury, which *efficiency* must necessarily eliminate..

Conclusion.—Now if these principles are accepted, viz.: that efficiency is the vital thing, that it is to be gauged in the whole business, the company, the department and the individual by significant facts, and that significant facts are largely statistical facts, then the question is what can we do to get and use statistical facts for this purpose? Are we going to wait until some one comes along and tells us just what to do and how to do it? Those who wait will be left behind.

Can accountants and statisticians ever master all the ideas, practices, operations and possibilities in the detail

administration of the business and formulate a statistical method for every piece of work? Probably not.

The knowledge of just what details are needed comes only through daily contact with the problem,—such contact as only the field forces and the detail administrators can get. The accountant can simplify and harmonize processes and can develop, arrange and interpret general data, but the field for study and interpretation of specific data applying to his own particular work lies open to every man ambitious enough to enter it.

The Telephone in the Courts

Conducted by A. H. McMillan

No Authority in Council to Revoke Franchise.

The case between the city of Huron, S. D., and the Dakota Central Telephone Company is gradually approaching its end, although there are several possible stages yet before it. The city council on January 24, 1908, passed a resolution notifying the telephone company that its franchise, which expired March 11, would not be renewed, and also required that the poles and wires be removed from the streets and alleys of the city. In response the company applied to the U. S. court at Sioux Falls for an injunction restraining the city from putting its resolution into effect. On March 12, Judge Carland granted a temporary injunction, which was on trial made permanent, on the ground that the council acted by the delegated authority of the state in giving the franchise at the beginning, but that it had no authority given it for withdrawing its permission.

In the spring of the present year the controversy was renewed by the city when Judge Taylor was asked for an injunction restraining the telephone company from in any wise extending its system in the city of Huron. The company replied by an application to the Supreme Court for a mandamus commanding the city not to interfere with the operation of its plant or the extension thereof. The court refused to entertain the question on the ground that it was not of sufficient statewide importance to justify the court in hearing it, unless it should come before it on appeal, and a bad precedent would be set which would result in the presentation of cases unnecessarily before the highest court of the state. The company then applied to the U. S. court at Sioux Falls for an order citing the city to appear and show cause why the injunction of Judge Taylor should not be dismissed. Meantime the temporary injunction of Judge Taylor was made permanent.

Assessors Must Act in Accordance With Statement Received.

The Glen Telephone Company brought proceedings against the assessors of the town of Canajoharie, Montgomery County, New York, to review an assessment. The president of the company had filed a sworn statement with the assessors, upon the review of their assessments showing that all the property of the company, either real or personal, situated in the town, consisted of its poles, wires and equipments; that all except the switchboard and telephone instruments was located in, upon and above the public highway in said town, and had been assessed by the State Board of Tax Commissioners as real estate, and included in its value of the special prices enjoyed by the company at $1,200. There was no evidence other than this sworn statement before the assessors. In passing upon the question whether the assessors were justified in discrediting the statement made to them by the president of the company and making the assessment, the court held that the assessors were not free to capriciously disregard the evidence, but, acting in a judicial capacity, must decide in accordance with the evidence. It was therefore held that the assessors could not fix an assessment on the value of the real estate of the company in the town, on the ground that all the wires, tolls and equipments were not maintained on the highways of the town. People vs. Hall, 114 N. Y. S., 511; see also People vs. Failing, 114 N. Y. S., 514.

Restoration of Contract.

Asserting that the Kinloch Telephone Company, the plaintiff in a case against Dr. Dragon of St. Louis, Missouri, was defeated by a clause in its own contract, Justice Stanton decided against the company. Dr. Dragon was being sued for $36.28 for telephone service from July 1, 1908, to March 31, 1909. He asserted that on October 29, at 10 a. m., the telephone company cut off his service because he had not paid for the months of July, August and September. But following a telephone message from his wife that the bill would be paid, the service was resumed.

A clause in the contract stated that should the telephone be discontinued for non-payment, the rental or other charges due under the service would be furnished again.

The defendant's contention was that, as all previous accounts had not been paid before the renewal, the contract had not been restored to operation, and hence the plaintiff was not entitled to recovery. The court held that the mere act of the company in continuing the service did not restore the contract.

Notifying Free Subscribers that Requisite Number of Telephones are Installed.

At Butte, Mont., the Montana Independent Telephone Company has secured a verdict in its suit against M. J. McDonough for telephone service. The claim was $36 for two telephones:. In Justice's court, the company secured a judgment for only $9, and appealed the case. In the trial of the case on appeal before the jury, it appeared that the two telephones were installed in the fall of 1907 under an agreement that no charge was to be made for the service for the first three months unless within that time the number of telephones in use in that service in Butte should reach a total of 1,500. Defendant contended that he was not notified that the whole number of 1,500 telephones had been installed and that he would be expected to pay for the service from and after the serving of the notice, but this was not held to be a sufficient defense.

Yates Hotel Case Carried to Court of Appeals.

Notice of appeal to the Court of Appeals has been filed at Syracuse, New York, in the case of the Central New York Telephone & Telegraph Company against Charles S. Averill and another. The plaintiff brought suit against the defendants who are proprietors of the Yates Hotel, for an injunction restraining them from installing in the hotel a switchboard and system of room telephones of the Independent Telephone Company. The defense was successful at the trial, but on appeal the judgment was reversed by the Appellate Division of the Supreme Court. The appeal is from this decision.

Practical Questions and Answers

Requirements for Laying Out Phantom.

We wish to work a phantom circuit between two towns about nine miles apart and would like to know just how and where or how far apart the transpositions should be placed. We enclose a rough sketch of the line showing where there are high tension lines near our lead.

Should the phantom transpositions be placed any nearer together where we parallel the trolley or arc light circuits? At present we get quite a little induction from the arc light circuit, but are not troubled with the trolley line. Would it help our physical circuits any to cut in more transpositions where we parallel the arc light circuit?

It is not possible with the information submitted in your query to make a definite reply. All problems of this nature require a very full statement of all the conditions. Pole diagrams should be furnished showing the pin location of all wires, with the horizontal and vertical distances between them all. The gage and material of each wire should be stated. A plan should be prepared showing the circuits throughout their entire length, with complete information as to each circuit, including the number and location of all present transpositions, location of telephone drops, arc lamps and electric light or power transformers, character of current transmitted by all parallel railway, lighting and power circuits, stating whether direct or alternating; voltage; if alternating, state whether single, two or three phase; and give the frequency and state also the normal full load currents in the railway, lighting and power circuits. Photographs of typical portions of the line or lines are always a valuable aid in grasping the situation.

In general, your proposal to phantom two physical circuits, which, as shown in your diagram, are not immediately adjacent is not common practice and under the condition of exposure to alternating current arc circuits is not to be recommended. Circuits 2 and 4 are separated by an intervening circuit and the phantom transpositions as you propose them

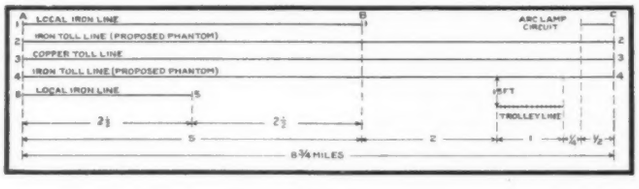


Fig. 1.

would not be made conveniently, although it would of course not be impossible to make them.

In our opinion you would secure much better results by making a change (Fig. 1), in your wire arrangement, as follows: Interchange circuits 2 and 3 throughout the whole distance of 8¾ miles, or perhaps a less expensive plan would be to interchange circuits 1 and 4 by transferring the drops on 1 to 4, cutting 4 five miles from *A*, or at *B*, and transferring 4, between *B* and *C*, to the pin positions occupied by 1, for a distance of 3¾ miles. This would reduce the spread of the phantom circuit and therefore reduce the induction from the railway, lighting and power circuits; the work of cutting in transpositions would also be facilitated. The necessary number and proper location of phantom transpositions cannot be stated, for reasons already given.

Grounded Phantom.

When we have four grounded lines running from "Central" at *A* to *B* and beyond, all of different lengths, and carrying from 15 to 20 bridging telephones on each line, can we use four coils and secure a phantom circuit from *A* to *B*?

You can arrange a phantom circuit, or two of them, on the lines which you describe, but you will not gain any circuits. Having four ground circuits on four single wires, you can make two of them metallic, using the four wires for the purpose. Then you can cut in a repeating coil at "Central," and one at *B* on one of the metallic lines, and bring in one of the remaining ground circuits as a ground phantom. In the same way you can bring in the other

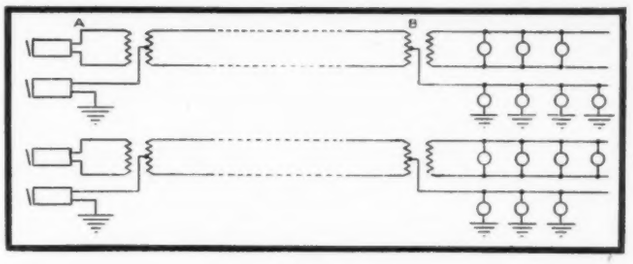


Fig. 2.

grounded circuit as a phantom on the other metallic line. Fig. 2 shows how this can be done.

Leaks on Phantom Circuits.

Please give me a diagram for using single metallic circuits with grounded phantom circuit; also state what resistance will coils have to be and what capacity the condensers?

Would grounds such as these affect the phantom any more than they do a grounded circuit? The metallic circuit is about seven and one-half miles long and of No. 12 B. B. iron wire.

For phantom circuits use a repeating coil having four windings. One good coil has, for your purpose, each winding of about 35 ohms. No condensers are used. The circuit is given in answer to the query, "Grounded Phantom," Fig. 2.

Tree grounds affect phantoms more than other lines.

Cost of a Plant for South America.

Some business associates of ours, located in South America, ask for information regarding the approximate cost of the equipment, exclusive of poles and wire, of a telephone system of 500 telephones. The outfit is for use in South America, and our friends ask to be furnished, if possible, with the cost of operation for one year of a similar system in a small American town. Can you furnish statistics regarding the cost of operating telephone systems? If so, we would consider it a great favor if you would comply with our request.

We cannot go into the matter in full detail here, but the following statements, with all of which perhaps you are already fully acquainted, will outline a general answer.

In the first place, in order to consider the probable cost of a telephone system of 500 telephones, exclusive of poles and wire, we would want additional information regarding the density of population, that is, the area covered; whether subway would have to be installed; whether a multiple board would be required, etc. While it might appear that in an exchange of 500 telephones neither of the latter would be requisite, it is possible that the city under consideration might be of quite large population, in which a low percentage of telephone development is at present expected, but which might, with an adequate system and reasonable rates show considerable growth, in which event

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

it might be desirable and ultimately economical to provide multiple equipment and a limited subway system. On the other hand, if a group board is used the prices will be materially different from the multiple arrangement. With the group board arrangement the switchboard and telephone installed should cost not to exceed $13 per line installed, plus the freight, customs duties, etc. The underground system, however, is entirely problematical and might run all the way from ten to twenty dollars per telephone. In the absence of any data, we will hazard a guess that the cables for the plant would probably cost in the neighborhood of twenty dollars per telephone.

Regarding the cost of operation, in a unit of this size under average American conditions, including operating, maintenance, general and all expenses exclusive of investment, we would say that it should not exceed $8 per telephone per year.

We would suggest that if your associate really wishes accurate information that he consult an engineer, who will show him how to obtain definite knowledge regarding it.

Telephone News

Tax Reductions in New York.

Justice James A. Betts, sitting at the last special term of the Ulster Supreme Court issued orders reducing the franchise tax assessments of a number of telephone companies in New York State, and directing the local assessors concerned to refund surplus taxes to the companies. Justice Betts directed that the franchise tax assessment levied against the Hornellsville Telephone Company be reduced to eighty per cent of the former value, and that the city of Hornellsville refund to the company $109.56, surplus tax paid. A second order directed the State Board of Tax Commissioners, which fixed the final assessments in all these cases, to reduce the assessment levied against the Ithaca Telephone Company to seventy-eight per cent of the former valuation and the city of Ithaca to return $181.57 surplus tax. The town of Murray, Orleans county, was directed to reduce the franchise tax levied against the Inter-Ocean Telephone and Telegraph Company to seventy-seven per cent of the original figure and to return any surplus moneys collected. A similar order directed the town of Aurora, Erie county, to reduce the franchise tax levied against the Inter-Ocean company to seventy-four per cent of the original valuation and to refund to the company $88.76, the amount overpaid.

Complaint Entered in Suit to Prevent Merger at Racine, Wis.

On July 27th John W. Mikulecky entered suit against the Wisconsin Telephone Company, Alonzo Burt, Citzens Telephone Company, Charles R. Carpenter and Bernard H. Hinrichs to prevent a combination of the Citizens Telephone Company with the Wisconsin Telephone Company (Bell) at Racine, Wis. The complaint, drawn by Thompson & Harvey of Racine, assisted by officers of the International Independent Telephone Association, recites that the Citizens company has a municipal franchise which provides that no sale shall be made which will render competition inoperative. It is set forth that the Citizens Telephone Company is in good financial and operating condition and that the Wisconsin Telephone Company is in competition with the Citizens Telephone Company, and that on June 5 the Wisconsin company submitted a proposition to the stockholders of the Citizens company to purchase their stock on stated terms.

The bill recites that "the purpose of the sale of said stock is to destroy and eliminate competition in the telephone business in the city of Racine, and that said sale will tend to make, and will make, competition inoperative in said business and will create a monopoly in the telephone business in the city of Racine and will place the management and control of said Citizens Telephone Company in the hands of said defendant, Wisconsin Telephone Company. That said sale is contrary to public policy, illegal and ultra vires, and also contrary to the terms and provisions of said municipal franchise.

"That the defendants, Wisconsin Telephone Company, Alonzo Burt, Charles R. Carpenter and Bernard H. Hinrichs, with others unknown to the plaintiff, have conspired together to bring about the sale of said stock of the Citizens Telephone Company to said defendant, Wisconsin Telephone Company, and to destroy and eliminate competition and create a monopoly in the telephone business in the city of Racine."

The bill further states: "That the plaintiff is the owner and holder of two shares of stock of said defendant, Citizens Telephone Company, and that he is satisfied with his investment in said Citizens Telephone Company and desires to retain his stock and not sell. Plaintiff further alleges that said sale, if consummated in whole or in part, will lessen the value of said stock and tend to destroy its value and compel him to sell to said defendant, Wisconsin Telephone Company, against his wishes."

Ohio Judge Modifies Dual Connection Injunction.

On July 14th Judge Broderick of Bellefontaine, Ohio, made an order permitting the wires of the Central Union Telephone Company to be reconnected with the exchange of the United Telephone Company. This is the case in which a temporary injunction had been issued restraining the Home company from interchange of business with the Central Union company. The matter will be pushed forward to the higher courts of the State, where, it is expected by the Independent people, that the contract of the United Telephone Company will be upheld as has been done by other judges of the State Courts.

Attorney General of Pennsylvania Passes Merger Question Along to Pennsylvania Railroad Commission.

The Attorney General's Department of the Commonwealth of Pennsylvania has disallowed the petition of the Consolidated Telephone Companies (of Allentown) for the institution of quo warranto proceedings against the Bell Telephone Company of Pennsylvania and the Slate Belt Telephone & Telegraph Company.

The opinion in the matter was written by Deputy Attorney General Jesse E. B. Cunningham, who has conducted the entire case. Mr. Cunningham states that the matter apparently comes within the jurisdiction of the State Railroad Commission, and suggests that the petition be withdrawn from the Attorney General's Department and filed with the State Railroad Commission. This course will probably be followed by the American Union Telephone Company (of Harrisburg), of which the Consolidated Companies is a subsidiary concern since last year's merger, and which has appeared as the actual plaintiff in the case.

Transferring the complaint from the Attorney General's

office to the State Railroad Commission will mean a delay of at least six weeks, possibly much longer, before action will really be started. The title of the Railroad Commission is somewhat of a misnomer, because it has jurisdiction over all public service corporations of the type of common carriers, including telephone and telegraph lines.

The averment of the plaintiff Consolidated Companies before the Attorney General's Department was that the Slate Belt company entered into a secret agreement last May with the Bell Telephone Company by which the Bell company was to handle the State Belt company's long-distance traffic originating in Monroe and Northampton counties, Pa., the territory covered by the Slate Belt lines. This agreement, the petition alleges, was in violation of a traffic contract of months' standing between the Slate Belt and the Consolidated companies. The facts as commonly known by the public appear to bear out the complaint of the petitioner.

The petition is the first of its kind in the state and is attracting wide attention, for in addition to alleging violation of contract, the petition charges conspiracy in restraint of trade and violation of the Pennsylvania anti-trust law.

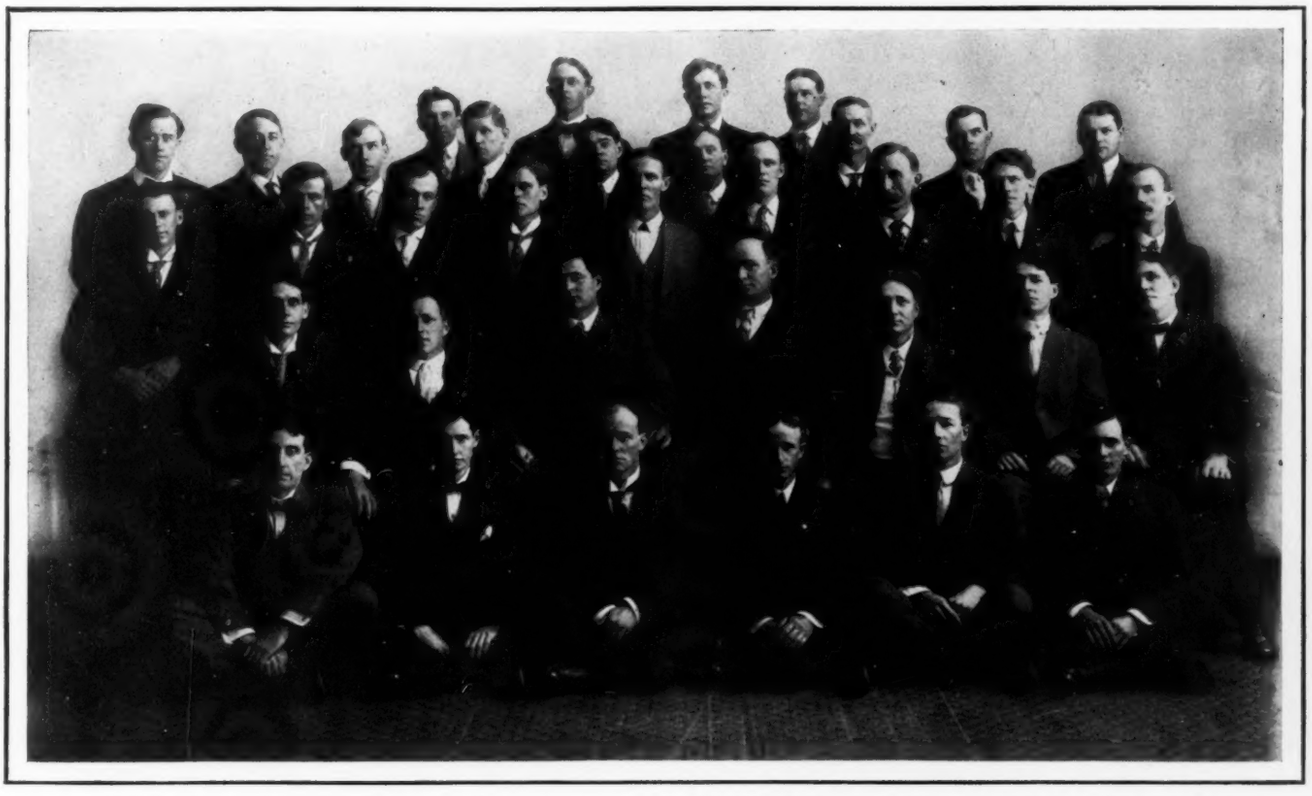
The Railroad Commission will hold no meeting until the middle of September, but it can at that time set machinery in motion at once, should the case be brought before it. Should the Consolidated Companies go before that tribunal, as they probably will, the petition will probably be filed soon and the respondent companies can make answer thereto, upon notification, without waiting for the commission to meet next month. When the meeting is held, the Railroad Commission can set a date for a public hearing, if the papers in the case lead the commissioners to believe that such a hearing is necessary.

The Railroad Commission can only recommend adjustment of a difficulty. If the offending corporation or corporations refuse to comply with a ruling by the commission, the latter body must certify the facts to the Secretary of Internal Affairs and the Attorney General for legal action. This applies to all cases before the Railroad Commission. During the eighteen months that the commission has been in existence, however, no corporation has ever refused to acquiesce in a decision by that body, although some very important ones have been made, affecting principally steam and electric railroads.

Some of the Men Who Built San Francisco.

The construction of the San Francisco Independent telephone system has drawn together some interesting groups of artisans in the several crafts required. The task of knitting together the complex system of cable conductors which make up a modern telephone system is an art requiring intelligence, industry and care. We present a group of portraits of the cable splicing force, which is just completing the initial cable system for San Francisco. This group of specialists, although gathered together from all over the continent, represents in that particular the San Francisco spirit. San Francisco, in her reconstruction days, called upon the world for skill and material, and both have been forthcoming.

The appended list of names will assist scattered friends in identifying the individuals of the group: W. C. Ross, superintendent of construction; T. Brasseur, general foreman; J. B. Maloney, assistant general foreman; H. Aldridge, A. Allison, F. A. Brownell, W. R. Clark, B. R. Clayton, B. Cullen, Ed. Day, M. Durkin, C. A. Elmore, H. Fowitz, A. Fox, R. Fox, J. Geel, W. J. Kelley, J. Lembke, C. T. Lewis, A. McMillen, F. M. Metz, Leo. Newland, B. O'Neill, J. Posch, Jas. Reilly, Jas. Ross, W. J. Saunders, F. A. Sawdey, E. J. Seaman, J. W. Stromberg, G. V. Tudhope, A. F. Van Ostran, L. D. Wilson, S. S. Wilson, R. B. Weaver.



Some of the "Men Behind the Guns" in the Construction of the Cable Plant of the Home Telephone of San Francisco.

Another Bell Company Eliminated by Consolidation.

The Hudson River Telephone Company, with headquarters at Albany, has officially passed out of existence. The new directory just issued is headed, "Bell Telephone Directory, Central District." Literature of the company states that the corporation is now the Central New York Telephone and Telegraph Company, with headquarters in Syracuse. Many of the important offices of the Hudson River company have been removed to Syracuse.

Manager Wants Information About Motorcycles and Trouble Wagons.

This company has under consideration the question as to the expediency and wisdom of purchasing a "Trouble wagon" or motorcycle for general purposes and especially for removing troubles.

We operate over a territory of about two hundred miles, and in some portions of it our roads are quite heavy with sand in the summer and mud in the winter. Our territory is, in many instances, inaccessible by railroad or by steamer, hence we have to incur heavy bills for horse hire, hotels, etc.

If the motorcar or motorcycle is practicable for roads, such as stated, then we wish to adopt it, and discontinue, in a large measure, the use of other vehicles.

We are anxious to obtain the views of different managers of telephone companies, or other persons, who have experience with these machines, and an opinion as to their merits or demerits, and whether or not there is prudence and economy in using them for the purposes stated.

The North State Telephone Company,
Murfreesburg, N. C. Per L. J. Lawrence, Manager.

Telephone Patents

Conducted by Max W. Zabel

MICROPHONE.

Giuseppe Angelini, Rome, Italy, patent 928,096, July 13, 1909.

This microphone transmitter consists of an enclosed grain containing chamber, its lower rigid electrode being connected to the main diaphragm by means of a flexible disk having wadding extending around the same, and supported on part of the flexible disk. Grains of carbon are provided in the chamber and in contact with both the electrode and wadding, the grains of carbon being more closely compacted toward the center than around it; the electrode has a serrated surface.

RESISTANCE CUP FOR TRANSMITTER.

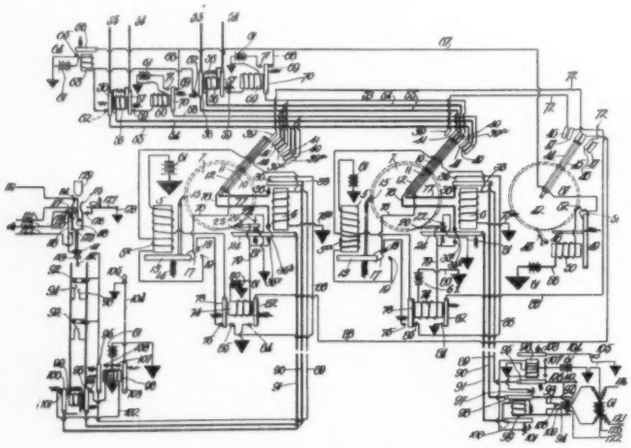
F. Gottschalk, New York, N. Y., patent 928,652, July 20, 1909.

In this transmitter arrangement, the carbon-carrying cup is divided into a plurality of compartments, each of which carries carbon granules between electrodes, the object being to produce sound-producing qualities, making it possible to have the transmitter talk in any position which it may occupy.

TELEPHONE SPSTEM.

David W. May, Kansas City, Mo., patent 928,680, July 20, 1909.

This system is designed for the provision of apparatus whereby the substation system is applied to common battery



exchanges. It consists in providing a plurality of substations into which subscribers' lines enter, and at which facilities are provided, consisting of connecting appliances 12, to transmit the call to the central exchange. The subscribers' lines enter at the upper left hand corner of the illustration, and passing through the instrumentalities as shown, carry the call on to the central exchange, when the operator upon receiving the call completes the connection. This saves the extension of the total number of subscribers' lines to the exchange, the connection being completed from trunk lines.

SELECTIVE TELEPHONE SYSTEM.

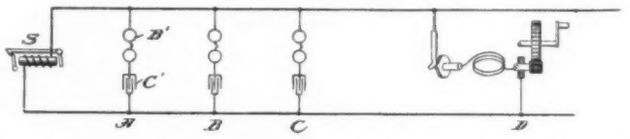
Henry G. Guyle, Sargent, Neb., patent 927,651, July 13, 1909.

This selective telephone system is designed generally for a selective signaling party line, and comprises a plurality of telephones having call bells, the talking circuits being formed through conductors carried by a rotatable switch member adapted to make one rotation in a given period of time. Time members are provided at each station, adapted to be rotated, and when stationary, form part of the calling circuit. Means are provided for rotating and also for locking the members and unlocking them.

HARMONIC SIGNALING SYSTEM.

Ray H. Manson, Elyria, O., patent 927,663, July 13, 1909, assigned to the Dean Electric Co., Elyria, O.

This invention consists in providing a generator *D*, for use with harmonic signaling subscribers' lines, having harmonic stations *A*, *B* and *C*, and also having a drop *S* at the exchange. The object is to have this generator so constructed that in ringing to call the central station, none of the harmonic bells will be affected. To accomplish this, the gener-



ator breaks each wave once or twice, so that each positive half of the generator wave is broken up into a series of irregular pulsations, thus, it is claimed, accomplishing the desired result.

SENDER FOR SELECTIVE SYSTEMS.

Frank G. Agrell, Stockholm, Sweden, patent 927,469, July 13, 1909.

In this calling system, switches are provided at the subscriber's station to operate automatic switches at an automatic exchange. In the general form of this invention, means are provided by which a subscriber sets the number of the subscriber he wishes to call on the mechanism, and then, by releasing the receiver on the switchhook sets the mechanism in

operation, which completes the call by sending the necessary impulses to the central station mechanism.

TRANMITTER MOUTHPIECE.

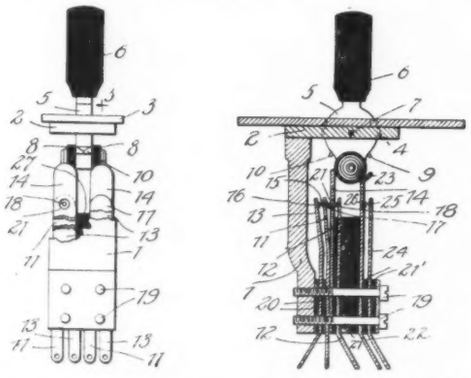
W. W. Dean, Elyria, O., patent 927,643, July 13, 1909, assigned to the Dean Electric Co., Elyria, O.

This transmitter mouthpiece consists of a bell-shaped body portion, stamped and formed from sheet metal. The threaded end is closed by a perforated wall which is flush with the end. The mouthpiece is covered with a special enamel to prevent corrosion from moisture in the atmosphere.

OPERATOR'S KEY.

Ray H. Manson, Elyria, O., patent 927,664, July 13, 1909, assigned to Dean Electric Co., Elyria, O.

This key is designed to prevent objectionable operation of the springs of the listening portion, when the cam lever 5 is returned from its ringing position. This, it is claimed, occurs when the ringing springs 23, force the lever back, thereby causing objectionable clicks in instruments connected with the circuit. To eliminate this, the spring 21 is not designed to make any particular contacts, but a complete set of pairs of

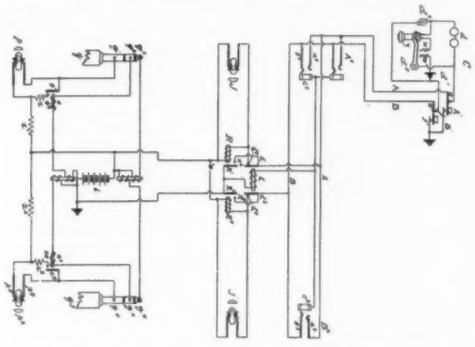


ringing springs 15 and 16 are provided, and as will be seen, the spring 21 must be moved a slight distance before the listening springs are brought into operative actuation.

DIVIDED MULTIPLE SWITCHBOARD SYSTEM.

Wm. Aitken, Muswell Hill, Eng., patent 927,470, July 13, 1909.

This system contemplates a divided central station switchboard of the common battery type, in which a subscriber can,



by pressing either of the buttons A^1 or B^1, operate a signal on either one of two sections of a central station switchboard, commonly known as the "divided board," thus calling the attention of the operator on one of the two sections by means of the signals $J J^1$. By pressing both buttons, a third section can be called in operation, thus to reduce the number of jacks necessary in the exchange.

AUTOMATIC SWITCHING APPARATUS.

M. Baumer, Nuremberg, Germany, pat. 928,171, July 13, 1909.

This invention relates to switching apparatus for an automatic branch exchange switching system, and is designed so that several substations are connected by means of trunk lines with the central exchange, and devices are provided at these substations to transfer the call into the central exchange, thus aving a great many subscriber's lines. In this system, there is no relay which carries a permanent current connecting the substation with the main line, but operating relays, each having two coils, are provided. One coil of the relay is for the purpose of bringing the armature into working position. These operating relays are connected to relays provided at the substations.

In the Manufacturing Field

Keeping Time from Running Into Big Money.

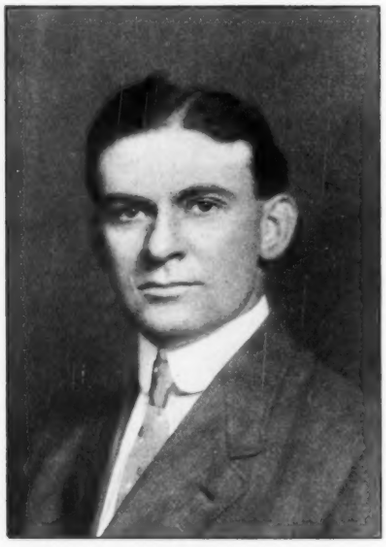
If there is one place in the world more than another where time is the equivalent of money, it is in the maintenance account of the telephone company operating in rural territory. In cases where reports come in that a telephone is out of order it is not the mere labor of repair which constitutes the source of expense. If each trouble really would originate in the telephone, and the instrument should be brought in by the man who makes the report, the repairs could perhaps be made in five minutes at an expense of almost nothing. The reason why maintenance costs money is that repairs have to be made at the point where the trouble actually is located, and the company pays the wages of a man, the hire of a "rig" and sometimes board for the man and horse, while on the road. So the small trouble which could be repaired at a cost of 5 cents if the difficulty appeared in the central office, actually does bring to the company a cost of four or five dollars by reason of its being located 20 miles away, and to be reached only over the bad roads so often found in the country tributary to telephone exchanges.

There is apparently no conceivable way of eliminating this time element, which is the true source of maintenance expense, but it can be very greatly reduced. For a long time people were afraid to use motor wagons in sections where the roads were bad, but the more recently developed cars for this sort of work have shown their ability to make good time and stand the racket. The cost of gasolene and the trifling repairs which are needed perhaps once or twice a year are small compared to the value of the time saved. Telephone men who have used motor cars now appreciate their value for everything from inspection trips, when they go out loaded with batteries, protectors, etc., to cases where a broken cross arm has to be replaced or a guy set in a hurry at a specific point. Of course, the purchaser of a car must assure himself of the absolute reliability of so important an addition to his exchange equipment.

The International Harvester Company of America has recently been paying particular attention to the requirements of the rural telephone operator. Its reputation is sufficiently established in the rural districts to serve as a guarantee of the high grade of material and workmanship as well as the simple and durable design which may be looked for in its cars. But the actual proof of the efficiency of these cars is the experience of some of their users, who have demonstrated that they make a real saving in telephone maintenance.

Changes in Dean Sales Organization.

The growth of the Dean Electric Company's business in the Middle West has been so remarkable that it has be-



Assistant Sales Manager, A. J. Roberts.

come necessary to increase the Kansas City branch house sales staff.

After August 1st, the company's assistant sales manager, Mr. A. J. Roberts, will be located at Kansas City.

Mr. Fred Coulson, who has been in charge of the Middle West, hereafter will devote all of his time to the large customers in the capacity of sales engineer. Mr. Roberts will have the management of the branch.

THE OXFORD TELEPHONE HANGER COMPANY, of Fayetteville, Ark., has closed the purchase of the plant and hardwood stock of the St. Louis Stave & Lumber Company of Fayetteville, and will at once manufacture the patented

Mr. Fred Coulson, Middle West Sales Manager, Dean Electric Co.

"Oxford detachable cabinet telephone," using the patented Oxford hanger. Both hanger and cabinet are protected by patents, that of the hanger having been issued about one year ago and that of the cabinet on May 3, 1909. The company has three years' supply of seasoned quarter sawed white oak and its output will be 500 complete telephones per day. Many orders are already in hand. The capitalization is $500,000, fully paid. C. E. Oxford is president and Harold H. Tittman of St. Louis, Mo., is vice-president.

New Manager of Kansas City Branch of the Stromberg-Carlson Company.

The Stromberg-Carlson Telephone Manufacturing Company, of Rochester, N. Y., has appointed Mr. S. W. Menefee as manager of its Kansas City office to succeed Mr. B. C. Hyde, who recently resigned.

Sam W. Menefee was born in the blue grass regions of Kentucky thirty-six years ago. He was educated at Georgetown College and served in county and state official positions in Kentucky for seven years. He then engaged as traveling salesman for a Louisville manufacturing concern and for some time traveled in southern Missouri, Arkansas and Louisiana.

Seeing an opportunity to again locate in his home state, he purchased an interest in a mercantile establishment at Danville and about a year later became editor of the Ken-

Mr. S. W. Menefee.

tucky *Advocate*, which he successfully edited and managed until the fall of 1904, when he became associated with the Kinlock Long Distance Telephone Company as manager of its plant at Alton, Ill.

A year later he accepted a position with the Stromberg-Carlson Telephone Manufacturing Company as Michigan representative and was soon afterwards given charge of salesman's work in both Michigan and Wisconsin.

In September, 1907, Mr. Menefee became manager of the credit department of the company, in which capacity he served until June, 1909, when he again took up salesman's work in the state of Texas.

Roebling Wire Exhibit at Seattle.

The exhibit of John A. Roebling's Sons Company at the Alaska-Yukon-Pacific Exposition is notable as a most complete demonstration of the character and possibilities of drawn wire.

A display of the actual work of wire manufacture would of course, be impracticable, but the visitor to the exhibit can see the changes undergone by metals drawn into wire, beginning with iron ore and progressing in regular order with samples of iron ore, pig iron, ingots, steel billets, rolled rods and drawn wire; the finished wire being shown

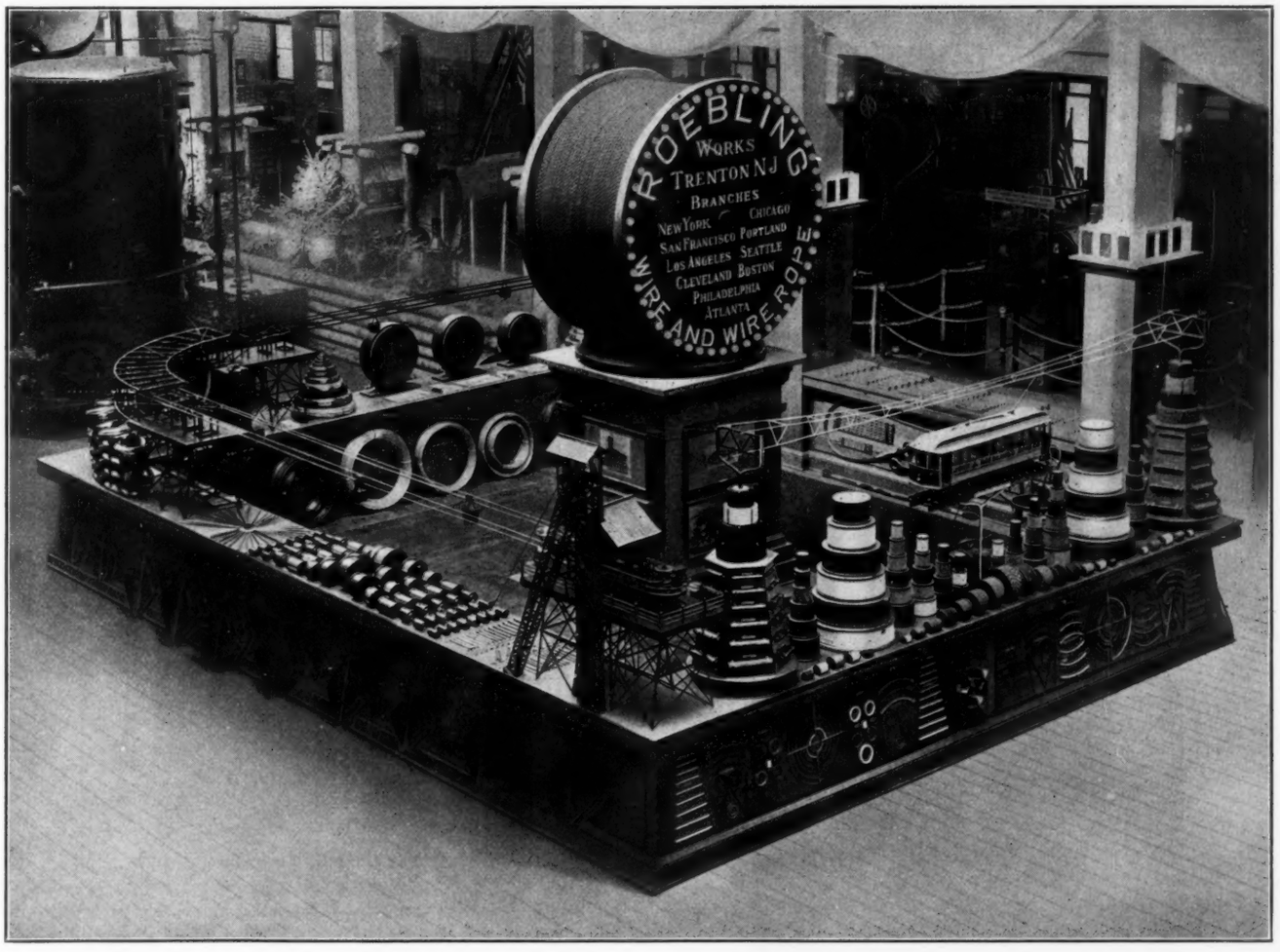
from the coarser sizes down to a diameter of 1-1000 of an inch.

In contrast with the delicate films of wire, there are displayed many samples of large wire ropes and full size sections of the supporting cables of the Brooklyn bridge, the Williamsburg bridge and the Manhattan bridge, in all of which Roebling wire is used.

There is a complete exhibit of electrical wires and cables, ranging from the finest magnet wire to the largest lead covered cables.

Different sections of trolley wire are also shown, while catenary construction is graphically illustrated by a model over-head span with a miniature trolley car beneath.

A reel of wire rope seven feet in diameter, and mounted upon a pedestal seven feet high, occupies the center space



The Interesting Exhibit of John A. Roebling's Sons Company at the Alaska-Yukon-Pacific Exposition Showing the Character, Uses and Possibilities of Drawn Wire.

of the exhibit. An even hundred electric lights with frosted globes are placed around the circumferences of two sides of the reel, which revolves continuously upon its pedestal.

A model tramway which transports miniature buckets loaded with shot is also shown in motion, both the reel and the tramway being electrically operated.

The exhibit, which is located in Machinery Hall, was planned by the engineering department of the Roebling company and all the mechanical work necessary to prepare it ready for installation was done at the company's works.

B. S. Barnard & Company, New York city, manufacturers of clay material and in particular vitrified, salt-glazed electrical clay conduit for underground installation, has issued a four page circular describing various products, such as single butt joints, two, four, six and nine-inch multiples of various sizes; also the "Lyle" mandrel, and metal wrappers and plugs used in conduit work.

The Duplex Metals Company, Singer Building, New York, has recently issued a neatly illustrated bulletin on copper clad steel wire showing the different shapes, the relative sections of copper and steel for different size wire and other purposes.

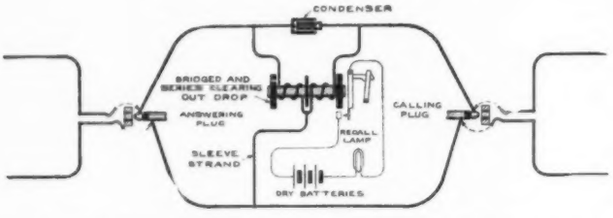
The Holtzer-Cabot Electric Company, of Brookline, Mass., and Chicago, Ill., has recently issued a number of flyers on various products, among them being the Type A telephone, which is a flush wall set, particularly adapted for residence use and fine interior installations. Others describe and illustrate the flexiphone, HC electro-mechanical bells for schools, hotels, factories, etc., and universal electric drills for alternating or direct current, capable of being attached to any lamp socket.

The Atlas Anchor Company, of Cleveland, O., has some very interesting prices and descriptive matter ready for telephone companies, who are interested in the purchase of guy anchors.

The Westinghouse Electric & Manufacturing Company has removed the sales office formerly located at Tucson, Ariz., to 173 San Francisco street, El Paso, Texas, where it will be continued as a branch of the Los Angeles office.

A New Switchboard for Manson, Iowa.

Manson, Iowa, is to have a new magneto switchboard equipped with bridged and series clearing-out drops, lamp recall signals and master keys for the Monarch direct current selective system. The drawing of the cord circuit shows the bridged and series clearing-out system clearly.



Cord Circuit Showing the Bridge Series and Series Clearing-out System Used on the New Manson Switchboard.

A double wound clearing-out drop is bridged across the cord circuit with a ½ m. f. condenser between the windings. The condenser forces the ringing currents through the drops, but has practically no effect on the talking currents. With this system it is said to be impossible for a ring-off to get by the board no matter how unfavorable are the line conditions. The diagram also shows how the recall lamp is operated by a relay contact on the armature of the clearing-out drop, which closes a local circuit. By means of this lamp a subscriber can get back on the line immediately, even though the shutter of the clearing-out drop has not been restored. The relay contact is simple in design, has platinum contact points and a reliable adjustment feature. This supervision system is convenient and does not cost much.

The board, which is being built by the Monarch Tele-

The 300 Line, Two Position Magneto Switchboard of the Central Mutual Telephone Company of Manson, Iowa.

phone Manufacturing Company, of Chicago, is to have a capacity for 300 lines, as shown in the illustration, and will be installed in the exchange of the Central Mutual Telephone Company the latter part of this month.

Crawford's Conduit Threading Machine.

A device has recently been invented and patented by Frank Crawford, of Pasadena, Cal., which is designed to thread cables through conduits already laid, and a recent demonstration of this machine is said to have proved its efficiency to do all that is claimed for it.

The Crawford machine consists of a two-wheel truck upon which is mounted a reel that holds a stiff wire. This wire is automatically taken off the reel and forced through the conduit by means of a crank attached to the reel. Since the wire is pliable, it threads its way around any obstacle in the conduit, and makes compound curves successfully and rapidly, thus saving much time and labor over the old rodding device. A recent trial was made for the Home Telephone and Telegraph Company of Pasadena, which showed that a 240-foot conduit could be threaded by the Crawford machine in 28 seconds. Conduits 500 feet long have been threaded successfully in less than a minute.

The company which makes the Crawford machine is

The Crawford Conduit Threading Machine.

making a smaller machine for wiring conduits in buildings. This machine saves enough in wiring a single building to pay for itself.

The concern which is making this machine is known as the Conduit Threading Device Co., with factory and offices in Pasadena, California.

Mr. R. G. Tyler, general manager, was for several years secretary and manager of the J. S. Kemp Mfg. Co., which had factories at Waterloo, Iowa, and Newmark Valley, N. Y., and finally sold out in 1906 to the International Harvester Company. From that time until Jan. 1 of the present year, Mr. Tyler has been superintendent of the Newmark Valley company. He is now devoting his time and energy to this new machine, which he believes will revolutionize conduit work of all kinds.

J. Bishop & Company, of Malvern, Pa., are in a position to make special quotations on platinum and invite inquiries from telephone companies.

Condensed News Reports

Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems

PERSONAL.

MR. CECIL ALEXANDER has purchased the system of the Gillett, Arkansas, Telephone Company. He will overhaul the entire system.

MR. L. W. FIELDING has resigned his position as manager of the Home Telephone Company of Jonesboro, Ark., but will continue to work in the interests of automatic telephony.

MR. C. C. CAMPBELL who for the past year has been in charge of the Canon City exchange of the Colorado Telephone Company has been promoted to the managership of the Sterling, Col., exchange.

MR. WILLIAM A. PATTON, manager of the Marion, Ind., exchange of the United Telephone Company, has been appointed to the position of secretary of the company, with headquarters at Bluffton, Ind. E. C. Knipple, who for years ably assisted Mr. Patton in the carrying on of the work, has been appointed manager to take the place left vacant by Mr. Patton.

MR. W. H. McQUOWN, who during the past four years has been manager of the telephone exchange at Havanna, Ill., for the Pekin Telephone Company, has resigned and will leave in the near future for Atchison, Kan., where he will at once take a position as special representative of the president of the Atchison Telephone Company. He will be succeeded by G. A. Vint.

NEW COMPANIES.

FREDERICA, DEL.—The Frederica Telephone Company was recently incorporated with a capital stock of $5,000 by John S. Campes, Wm. F. Hoey and George W. Spurry, all of this place.

GIBSON CITY, ILL.—D. A. Taylor, W. E. Crowe and W. S. Day are the incorporators of the Drummers Telephone Company of this city. The company is capitalized at $5,000.

WARRINGTON, IND.—The Warrington Telephone Company has been incorporated with a capital of $6,000. The company proposes to build, equip and operate a telephone exchange in Warrington and extend the lines throughout the north part of Hancock county. W. J. Kennedy, G. H. Blakeley and George Johnson are the directors.

DENISON, IA.—The East Boyer Telephone Company of East Boyer township has been incorporated with a capital stock of $5,000. The incorporators are Harlow Chapman, Tracy Chapman, James North, David Bell, George W. Slater, Wesley Starek, Henry J. Magill, Richard Kinney, Willis Mason and Frank Wulf.

FLAT LICK, KY.—The Flat Lick and Jarvis Telephone Company has been organized here for the purpose of building and maintaining a telephone line between Flat Lick and Jarvis, a distance of twenty-two miles and also between Flat Lick and Rosenbaum, a distance of 18 miles. Thomas L. Davis of Flat Lick is manager of the new company.

KINGSLEY, MICH. (Traverse County.)—Twenty-five farmers of near Kingsley, Paradise township, have organized a telephone company known as the East Paradise Telephone Company. The construction work is all completed and wires have been strung as far as Kingsley village. The officers of the company are: Edwin Clark, president; Bert Smith, secretary, and V. W. Bancroft, treasurer.

EASTON, MINN.—The Easton Telephone Company is the name of a new company organized to construct and maintain a telephone system. The company is capitalized at $1,200 and the incorporators are William Sippel, C. Bachtle, W. A. Cusick, W. C. Aschemer, T. Gaffey and B. M. Armstrong.

KELLOGG, MINN.—Martin Costello, M. K. Wolfe, Chas. Gongnagel, L. O. Cooke and others have incorporated The Telephone Company at this place. The company is capitalized at $5,000.

DORSEY, NEB. (Holt County).—D. D. Miles, J. A. Brady, B. W. Postalwait, W. C. Sarchet, H. W. Tomlinson, James E. Wiley, W. L. Adler and Wm. Carson are interested parties in the organization of a company to be known as the Dorsey Independent Telephone Company to operate in the state and Holt county. The company is capitalized at $3,000. The company has been granted a franchise for a period of twenty-five years.

WADENA, MINN.—A rural company was recently organized by the farmers south of this city. The line runs from this city, south through England Prairie and to within two miles of Hewitt and is now in operation. August Ladwig is president of the company; B. F. Holly is secretary, and I. C. Tunison is treasurer.

EDGAR, NEB.—Articles of incorporation have been filed by the Edgar Home Telephone Company with a capital stock of $100,000. The board of directors is made up of H. C. Hart, G. H. Avery and N. Tompson.

McDONOUGH, N. Y.—The Northern German & Pitcher Telephone Company is the name of a new company organized by Christopher Yaw, George Hall, and Samuel Bookwith, of Cincinnatus, New York.

MEDEA, OKLA.—The Medea Telephone Company, with a capital stock of $2,500 has been incorporated at this place by S. L Sheet, J. L. Horice, and F. M. Gibson, all of Fairbanks, Okla.

RIPLEY, OKLA.—J. B. Bennett, Harry Greer and W. F. Tietz are the incorporators of a new company to be known as the Olive Grove Telephone Company.

STILLWATER, OKLA. (Payne County).—With a capital stock of $15,000 the Payne County Rural Telephone Company has been incorporated at this place. Those interested in the organization are H. A. Jones, O. W. Trigg, and S. H. Stanley.

CHAMBERSBURG, PA.—The Grindstone Hill Rural Telephone Company is the name of a new company incorporated recently. George H. Branthaver has been chosen president; Charles Branthaver, secretary, and John Hafer, treasurer of the new company.

HARRISBURG, PA.—One of the largest telephone and telegraph companies ever organized in the United States has been chartered at the state department under the name of the National Telephone and Telegraph Company, which will operate in every county in Pennsylvania and every state and territory in the Union. The route of the company begins at a point vaguely stated "at the Delaware river, in Bucks county, Pa. It then starts west in Pennsylvania with ramifications and branch lines in every county, city, town, borough, village and hamlet in the State, passing through Philadelphia, Lancaster, Reading, Harrisburg, all points east, west, north and south on the way to Pittsburg. Its lines then extend to every other State and Territory, north, south, east and west, as far east as Maine, west to the Pacific slope. South to the Gulf and north to Alaska." As a starter the capital of the new company is but $10,000. The incorporators are Charles E. Wilson, Clarence L. Harper, F. R. Shattuck, Edwin M. Finletter and Horace M. Schell, all of Philadelphia. Mr. Harper is treasurer, with offices at No. 140 South Fourth street, Philadelphia.

LIMERICK, PA.—The Limerick Telephone Company has been granted a charter for the construction and maintenance of a telephone system in this place. J. A. Tranley, William H. Weaver, W. E. Peterman, A. G. Fry, Levi Zeigler and others are the incorporators.

LINCOLN, UTAH.—The Progressive Telephone Company of this city has filed articles of incorporation. It has a capital stock of $3.500 and the following officers have been elected: J. W. Whitehead, president; H. W. Sagers, vice-president; H. W. Droubay, treasurer, and Charles Hanson, secretary.

FARMVILLE, VA.—The Farmville Telephone Company has been organized with R. B. Johns, president; R. E. Johns, Jr., general manager; E. R. Booker, secretary-treasurer. Material for the construction of the system has all been ordered.

DEEP VALLEY, W. VA. (Tyler County).—A new company, known as the Farmers' & Merchants' Telephone Company, has been incorporated with a capital stock of $5.000. Arlington Dotson and others of Doddridge and Tyler counties are the incorporators.

MILAN, W. VA.—N. D. Wilson, N. G. Dasher and others of Milan have incorporated the South Fork Mutual Telephone Company for maintenance and construction of a system in Hardy county.

PENNSBORO, W. VA. (Ritchie County).—The North Bend and Southern Telephone Company is the name of a new company organized here. Capital stock is placed at $5,000. Zadok Ash of Joseph's Mills headed the list of incorporators, who are from different places in the county.

TOLEDO, ONT., CAN.—The Rural Telephone Company of Kitley, with main office at Toledo, has been incorporated with a capital stock of $10,009. A. R. Hanton, J. M. Edgar and R. T. Beckett are the provincial directors.

FINANCIAL.

FAIRFIELD, ILL.—The Peoples Telephone Company of Southern Illinois with headquarters at this place has increased its capital stock from $10,000 to $20,000.

FRANKFORT, KY.—The East Tennessee Telephone Company has filed amended articles of incorporation with the secretary of state, increasing the capital of the company from $1,000,000 to $5,000,000.

HARLAN, KY.—The Harlan Telephone Company has increased capital stock from $4,000 to $5,000.

LEXINGTON, KY.—At the meeting of the Executive Committee of the Board of Directors of the Fayette Home Telephone Company, held at the Telephone Building recently, the regular quarterly dividend of 1½ per cent on the preferred stock of the company and a quarterly dividend of 1 per cent on the common stock of the company were declared.

SAGINAW, MICH.—The Valley Home Telephone Company is making plans to materially increase its capital stock to enable it to make many needed extensions to its lines. The company is in good condition. Semi-annual dividends of 3 per cent are being paid on the common stock as well as on the preferred.

CANTERBURY, N. H.—The Canterbury and Boscarven Telephone Company has increased its capital stock from $2,500 to $5,000. The company will make many extensions to its lines, for which material has already been purchased.

WEATHERFORD, OKLA.—The Farmers Mutual Telephone Company which owns rural lines throughout the country has increased its capital stock from $2,500 to $10,000 for the purpose of operating a local exchange in Weatherford and to extend its rural lines into the adjoining counties.

WISE, VA.—The charter of the Wise Telephone and Telegraph Company has been changed, increasing the capital from $5,000 to $6,000.

SPOKANE, WASH.—The Inter-State Telephone Company has paid its regular semi-annual dividend of 3½ per cent. This company is in excellent condition, operating exchanges in all the large cities and a network of long-distance lines throughout this district. The company is capitalized with $500,000 common and $500,000 preferred stock.

FRANCHISES.

PARAGOULD, ARK.—The Home Telephone Company of Jonesboro is seeking admission into Paragould. An ordinance granting a franchise to the company has been read three times in the city council but action has been deferred. The Jonesboro company, through its representative, agreed to defer action on the ordinance, and invited the council to appoint a committee to visit Jonesboro and inspect the workings of the Home automatic system.

CONSTRUCTION.

EL DORADO, ARK.—The El Dorado Telephone Company has recently commenced the construction of a line from this place to Bastrom, La., for the use of new rural subscribers.

TRUCKEE (Nevada County) CAL.—Mr. Neumiller and associates of Webber Lake have just completed putting in a private telephone line from Truckee to Webber Lake, a distance of 16½ miles. Most of the way the line was strung on trees through quite a rough country. The necessity for a telephone line was acutely brought to notice through an accident to a guest last summer, when it was necessary to send clear to Truckee for a doctor.

ASHTON, ILL.—The Farmers Telephone Company has recently been overhauling its system in this city, making it up to date in every respect. At present there are 400 telephones connected with the Ashton central and many more will be connected in the near future. The company is contemplating putting in another through wire to Franklin Grove, which would give Ashton three lines.

WOODHULL, ILL.—The stockholders of the Woodhull Village Telephone Company have decided to reconstruct the system within the village at an approximate cost of $1,900.

INDIANAPOLIS, IND.—The New Long-Distance Telephone Company has just completed an additional toll line circuit between this city and Terre Haute, and between this city and Ft Wayne. The Indianapolis Telephone Company will complete its Eastern or Irvington exchange system this week when a large number on the waiting list will be given service.

WINCHESTER, IND.—The Eastern Indiana Telephone Company has purchased property in Saratoga and will build a new exchange in this city. The company will entirely rebuild its system, and a new switchboard will be installed.

CUNNINGHAM, KAN.—The Home Telephone Company is making arrangements to construct a new rural line. About 25 miles of wire has already been received.

HARLAN, KY.—The Harlan Telephone Company has appropriated funds for the extension of its lines throughout the county. One line will be built from Harlan to Martin's Forks, 15 miles, there connecting with Rose Hill, Va. Address S. W. Green, manager.

HORN, KY.—Robert B. Franklin and others will build a local independent telephone line from Horn, via Millstone to Rockhouse Creek, to connect with the Upper Rockhouse and Beaver Creek Telephone Company's line. They will start from a connection with the Eastern Kentucky Home Telephone Company's lines at Pikeville, Ky. Construction material will be needed. Address, Robert B. Franklin, Horn, Ky.

SOUTH HAVEN, MICH.—The Kibbie Telephone Company has commenced work on its new exchange building in this place. The building is to be a modern two-story brick, and all equipment installed will be of modern type. The office rooms will be on the first floor, and the operating room and rest room for operators on the second floor.

STAUTON, MICH.—The Clifford Lake Telephone Company (Independent) has been organized recently, and a telephone line will be built from this city to Clifford Lake. Business will be exchanged with the Citizens Telephone Company.

LACONIA, N. H.—The recently organized Home Telephone and Telegraph Company of Alton is to establish a line from Alton to Gilmanson, to connect with the Citizens line from this city. Mr. Charles E. Carroll of this city is one of the directly interested parties.

GAINESVILLE, TEX.—The Santa Fe will follow the lead of the Illinois Central and a large number of the large Eastern railroads, and install a telephone system for use in dispatching trains. A line is now being constructed from Temple to Gainesville, Tex., through Fort Worth. This is on a division which carries a heavy traffic where the first test of the system will be made. Later, it is thought that the lines will be extended over the entire system.

WISE, VA.—The Wise Telephone and Telegraph Company is planning considerable construction work in the very near future. Lines will be run from Tacoma to Clintwood via Coeburn. Mr. L. M. Vanover, Jr., is manager of this company.

CASSVILLE, WIS.—The Farmers Telephone Company has just completed its metallic line from Cassville to Lancaster. It is the intention to put in a metallic line between Cassville and Bloomington and Lancaster and Bloomington, work having already been commenced. In time all towns and centrals will be similarly equipped.

UNITY, WIS.—The Unity and Southeastern Telephone Company has decided to extend its line to March Rapids if not through the town of Brighton.

ELECTIONS.

MONMOUTH, ILL. — The Monmouth telephone stockholders held their annual meeting yesterday for the purpose of choosing nine directors. The board chosen was, with one exception, the same as has served during the past year. Allen W. Pattee was chosen in place of George Schussler, who has removed to Dakota. The other men elected were: Fred Pattee, Fred E. Harding, C. C. McClung, J. E. Lanphere, J. E. Watson, R. Lahann, F. B. Smith and W. J. McQuiston

ROSEVILLE, ILL.—The stockholders of the Roseville Telephone Exchange met recently and in the selection of directors all the former directors were chosen for another year, with the exception of J. E. Lanphere of this city, who asked to be left off on account of pressure of other business. In his place Allen Adkisson was chosen. The board as now constituted consists of the following members: Henry Kirkpatrick, George W. Rayburn, Walter Waugh, Arthur Taylor and Allen Adkisson of Roseville and W. J. McQuiston of Monmouth. At the conclusion of the stockholders' meeting the new board met and chose officers for the year. The choice resulted as follows: President, Henry Kirkpatrick; vice-president, Allen Adkisson; secretary and treasurer, W. J. McQuiston; manager, Walter Waugh. The Roseville exchange is closely allied with the Monmouth exchange.

NORTHVILLE, S. D.—The officers elected to serve the interests of the Northville Mutual Telephone Company for a year are: President, J. Fred Henning; vice-president, E. McClintock; secretary and treasurer, John W. Hardin; manager, Frank Isenhour; directors, J. Fred Henning, W. R. Clark, E. McClintock, John W. Hardin of Northville, S. D., S. P. Watkins, Robert Knapton, Frank Isenhour of Athol, S. D. The company is very busy at present taking care of new business.

PARKERSBURG, W. VA.—It has just been reported that the West Virginia Western Telephone Company has completed its consolidation with the National Telephone Corporation.

In the reorganization of the West Virginia Western Company the following officers and directors were elected: J. H. Lininger, Harrisville, president; W. C. Handlan, Wheeling, vice-president; S. W. Harper, Wheeling, secretary and treasurer; A. C. Davis, Parkersburg, general manager; C. T. Hiteshew, Parkersburg, W. Va.; B. S. Pope, Parkersburg; A. L. Gracey, Marietta, O.; H. G. Feller, St. Marys, W. Va.; John A. Howard, L. E. Sands, Wheeling, and Alfred S. Hays, Boston, Mass., as directors.

SAUK CITY, WIS.—At the annual meeting of the Troy & Honey Creek Telephone Company, at Sauk City, the old officers were re-elected: E. M. Davis, president; J. U. Schmidt, secretary; J. E. Witwen, treasurer; Albert Walster and Henry Grotophorst, directors.

MISCELLANEOUS.

FORT WAYNE, IND.—The new directory of the Home Telephone and Telegraph Company will serve to show the excellent work being done by this company. Since the issuance of last year's directory over 500 subscribers have been added to the list.

SHERMAN, MICH.—The Citizens Telephone Company's exchange at this place was destroyed by fire recently. A great deal of the equipment was saved. The loss amounts to about $700.

HAMILTON, OHIO.—The Hamilton Telephone Company suffered great damage to its system by a severe storm.

DALLAS, TEX.—Work on the telephone system by the Independent Company in this place is being pushed very rapidly. About $200,000 have already been invested. The automatic switchboards are expected here daily and as soon as received will be installed. The new company's charter calls for completion of the system within eighteen months.

UNDERGROUND

SOUTH BEND, IND.—The work of installing the underground conduit has been commenced by the South Bend Home Telephone Company. This installation will cost the company about $50,000, but it will very materially improve the service and will also tend to make the streets of the city look much better, doing away with the poles.